

WILD FLOWERS  
OF THE  
WAYSIDE & WOODLAND





Yellow Flag (*Iris pseudacorus*)

*cat*

# WILD FLOWERS OF THE WAYSIDE AND WOODLAND

COMPILED BY  
T. H. SCOTT AND W. J. STOKOE  
BASED UPON THE STANDARD WORK  
"WAYSIDE & WOODLAND BLOSSOMS"  
BY EDWARD STEP, F.L.S.

CONTAINING  
A DESCRIPTIVE HISTORY OF 762 SPECIES  
TOGETHER WITH  
EIGHTY PLATES IN COLOUR  
ILLUSTRATING  
THREE HUNDRED AND TWENTY  
BLOSSOMS AND LEAVES  
ALSO  
A PICTORIAL COLOUR KEY  
TO FACILITATE IDENTIFICATION

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## PREFACE

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THE purpose of this work is to help a very large and increasing number of persons who possess a great love of flowers, and to encourage them to a truer appreciation of the country and of all that is beautiful in nature. It is sincerely hoped that it may arouse the interest of, and be of service to all those who have not time or inclination to translate painfully the terms of the technical descriptions as written by the scientist. In a work primarily intended for the identification of plants in the field, these technical terms have been used as sparingly as possible and in a manner that will not involve continual reference to a scientific dictionary.

Nevertheless, it is a work that, whilst it satisfies the rambler who merely wishes to identify the flowers by the wayside, it may also serve as a stepping-stone to the floras of Hooker, Bentham and others, so that should the interest of readers be awakened, they may take up the more serious study of either of these authors without having to unlearn what this modest work may have taught them.

It is also hoped, especially, that this book will serve as an introduction to the Flora and be used extensively by teachers and students in schools, Rambling Clubs, etc., in the course of their nature Studies, and in this connection particular attention is directed to the Pictorial Colour Key, in which reduced copies of the Coloured Plates are grouped according to the predominant tints of the flowers, as a quick and easy guide to the identification of the plants in the field and as described in the text.

The compilers desire to express their thanks to Messrs Frederick Warne & Co., Ltd., for their kind permission to use, as a foundation for this work, Edward Step's standard work, "Wayside and Woodland Blossoms," from which also the beautiful coloured illustrations have been taken.

The sequence of Families and Genera, as adopted by Bentham and Hooker in the latest edition of their "British Flora," have been followed, and to whose work the compilers also extend their grateful acknowledgment.

T. H. S.  
W. J. S.

Since the first publication of this volume many new Generic and Specific names have been adopted, and a list of these, including the authorities, is given on page 353.

## THE FORMS OF LEAVES

IN the descriptions of the species in this work, the shapes of the leaves are indicated, as far as possible, in ordinary language, such as oval, lance-shaped, awl-shaped, etc. A series of diagrams representing the principal forms of leaves is here given for easy reference.

If a leaf is described as *simple* it is undivided, as in Beech ; if *compound* the blade is broken up into two or more portions (leaflets), as in Clover.

Taking simple leaves first, we have an elementary type in some of the Conifers, such as Scotch Pine, which are *needle-shaped* (acicular), being narrow and very long, and ending in a sharp point. If this form of leaf tapers from a thicker base to a fine point, as in Furze, it is *awl-shaped* (subulate). Somewhat similar are the narrow (linear) leaves of Purple Heath, a term which applies also to the long leaves of the Grasses ; if this form has thickness as well as length and narrowness, so that it stands erect, as in the Flag, it is called *sword-shaped* (ensiform). A leaf that is about twice as long as broad, and with both ends rounded, as in the Rock-rose, is *oblong*.

Of leaves with the sides more curved, there is a number of variations in the shape, starting from the fully *round* (orbicular) leaves, as in the Sundew ; then by narrowing the width and tapering to each end, we get the *oval* or egg-shaped (ovate), as in the Blackthorn. If this form broadens into two rounded lobes, it becomes *heart-shaped* (cordate), as in the Violet. The heart-shape broadened and the tip rounded, it becomes *kidney-shaped* (reniform). Lengthen the oval and taper both ends gives an *elliptical* leaf, as in Sallow. Leaves of this form, but with the lower end broader with a gradual tapering to the tip, are *lance-shaped* (lanceolate), as in Ribwort Plantain. A further widening of the base, and continued in two pointed lobes directed downwards, the leaf becomes *arrow-shaped* (sagittate), as in the Sorrel. If these lobes turn outwards, as in the Cuckoo-pint, the leaf is termed *halberd-shaped* (hastate). A leaf having its broadest part at the tip and tapering to its base is then called *spoon-shaped* (spatulate), as in the Daisy.



At the base of the leaf-stalk there may be a pair of small outgrowths known as *stipules*, as may be seen on the leaf-stalk of the Roses. If a stalkless leaf encircles the stem it is described as *clasping* (amplexicaul), as in the Penny-cress. A pair of opposite, stalkless leaves may have their bases united, as in the Yellow-wort: they are *connate*. A single stalkless leaf extending unbroken around the stem is *perfoliate*, as in the Hare's-ear.

The *compound* leaf includes a vast number of forms exhibiting a greater unlikeness one to another, and the beginning of the process of gradation may be seen in many simple leaves whose margins are cut deeply into lobes, such as the *angular* lobes of the Ivy and the *wavy* (sinuous) lobes of the Oak.

If the cutting goes deep enough there is a separation of the blade into *leaflets*, which becomes a compound leaf. A simple form of this division is found in the *trefoils* (ternate leaves) as in the Clovers. In the Cinquefoil the round leaf is broken up into five leaflets (*quinate*) and arranged finger-fashion, called *digitate*. A similar radial arrangement of the leaflets, as in Hellebore, where the lowest pair are themselves divided and their divisions have a common foot-stalk, is termed *pedate*. Leaflets of elongate shape, forming pairs on opposite sides, as in the Vetches, is known as a *pinnate* leaf. If, as mostly happens, there is an odd leaflet at the tip of the midrib, the leaf is *imparipinnate*, as in the Ash. Another variation of the pinnate leaf is that of the Herb Bennet, where the terminal leaflet is much larger than the others. This form is known as a *lyrately pinnate* leaf. The Meadow-rue is an advance upon this, for some of its leaves are *tripinnate*. When the leaf becomes more complicated than this, as in the Umbellifers, it is known as *decompound*. The margins of both simple leaves and the leaflets of compound leaves may be either *entire*, cut into lobes or notched into teeth, and all very distinct in their pattern and distribution, and if large their own edges may have secondary teeth.

The simplest form of lobing may be seen in the Oak. In the Ivy it is broader, cutting the leaf into five triangular lobes. The leaves of the Cat's-ear are deeply scalloped with small pointed lobes between the scallops. In Dandelion the cutting is so deep that they get near to the midrib, the large tooth-like portions of the leaf curving downwards producing the type known as *runcinate*.

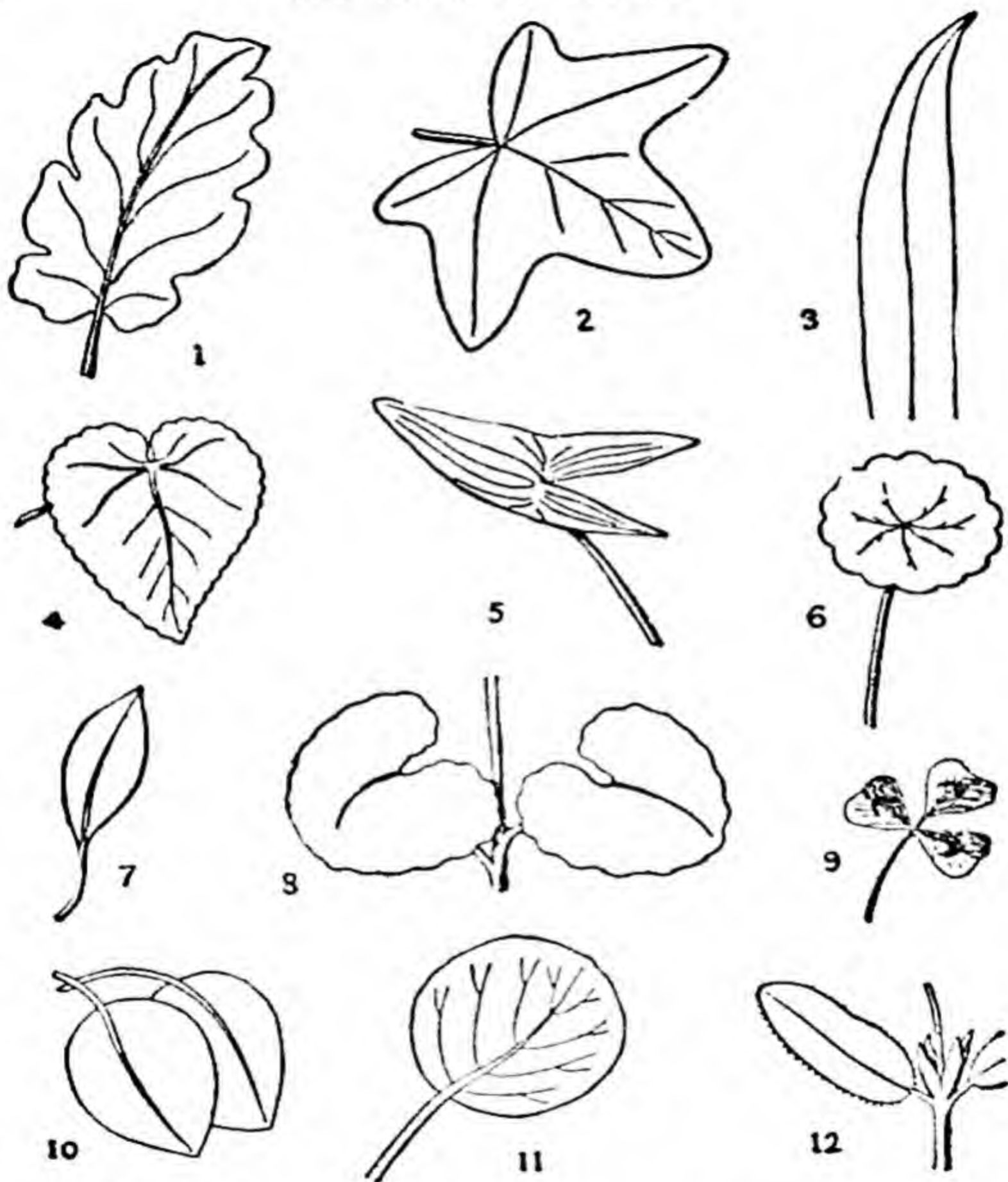
In the deeply and widely pinnatifid leaf of the Hardheads the segments are themselves lobed and toothed, as they are

also in the Ragwort. In Milfoil the numerous lobes are again lobed, so that the whole leaf is tripinnatifid.

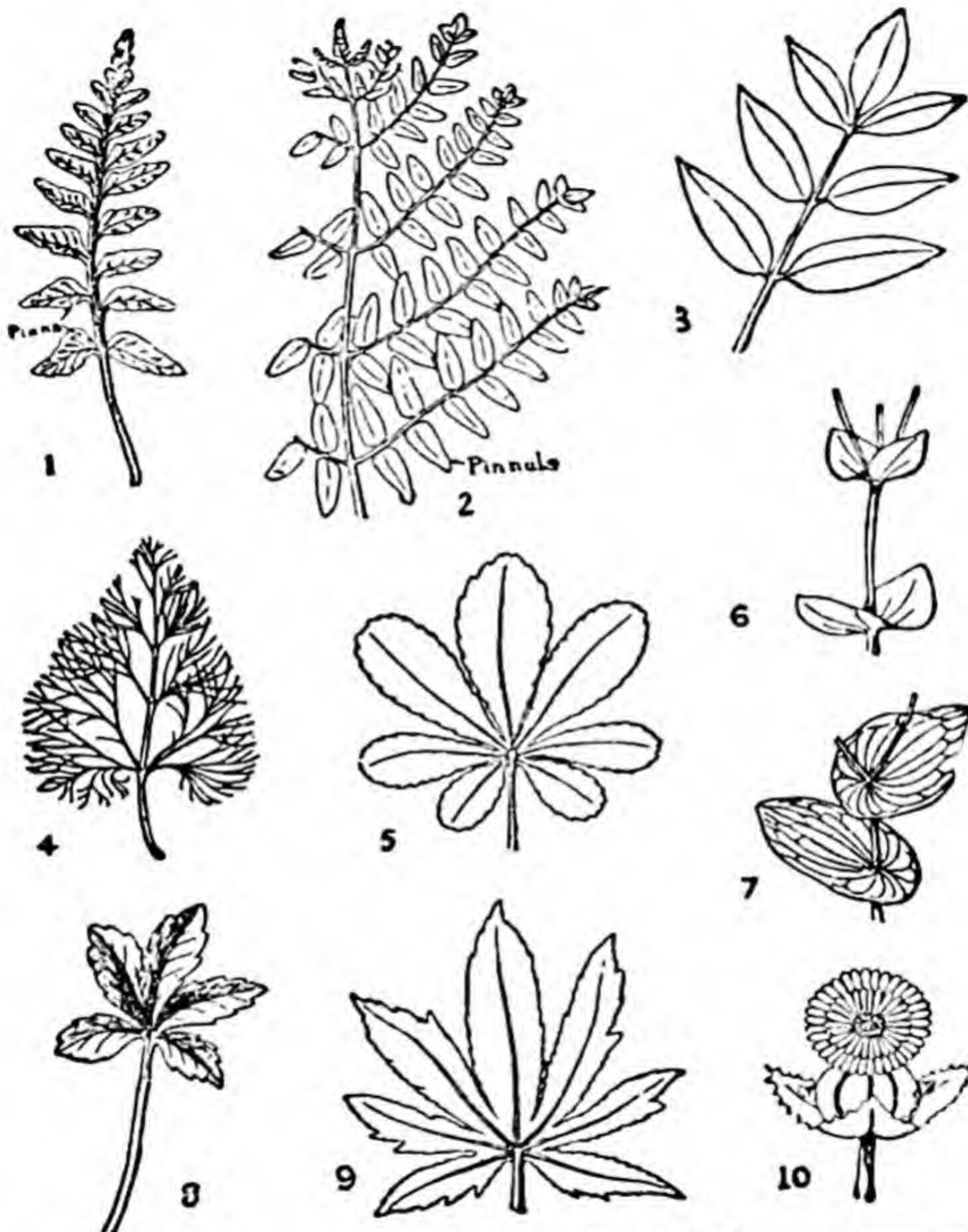
Although this list is not exhaustive, it is sufficient to show that a very interesting study may be made of leaves and the manner of their distribution on the plants. The leaves of seedlings should be compared with the foliage of the mature plant. They are often very different, and may give clues to ancestral relationships not only of species but of genera as well. Owing to this difference it is not always possible to say to which species a seedling belongs, but help in this direction may be obtained by securing ripe seeds from a known wild plant and germinating them in seed pans.



## THE FORMS OF LEAVES



1. Wavy-lobed. 2. Angular-lobed. 3. Sword-shaped. 4. Heart-shaped.  
 5. Arrow-shaped. 6. Round. 7. Simple. 8. Kidney-shaped.  
 9. Trefoil. 10. Oval or Egg-shaped. 11. Entire. 12. Oblong.



1. Pinnate Frond. 2. Bipinnate Frond. 3. Pinnate Leaf. 4. Decompound.  
 5. Palmate Leaf. 6. Connate Leaf. 7. Perfoliate Leaf. 8. Digitate Leaf.  
 9. Pedate Leaf. 10. Involucre.



## FORMS OF BLOSSOMS

IN giving a description of the parts of a flower and a brief account of the principal kinds of flower-grouping, it may be pointed out that this grouping is directly influenced by the connection between plant and insect. For instance, the smaller blossoms co-operate among themselves with the object of rendering them conspicuous, though individually they are very often insignificant. Most Umbelliferous plants, such as Wild Carrot, Fool's Parsley and Hogweed, have minute white or yellow flowers; yet by the simple expedient of mounting these flowers upon radiating foot-stalks of varying lengths, a hundred or more flowers are brought close together on a common level, and thus they form, not only to the human rambler but to the insect world also, some of the most conspicuous flower-masses of our hedgerows. Here, too, the honey is so exposed on open discs, that it is accessible to the short-tongued flies and small beetles, but in consequence cannot be obtained with ease by the long-tongued bees and butterflies.

It will be found that many flowers lay themselves out specially to attract the night-flying moths, and with this object in view they are most frequently pure white, and therefore very conspicuous.

But not only are plants specially adapted to encourage the visits of particular groups of insects, and to profit by those visits; many of them take pains to exclude unprofitable visitors of the smaller kind, who would simply steal honey or pollen without rendering any service in return. And so when Nature makes the tubular bell of the Foxglove just sufficiently large to enable a big humble-bee to enter and well dust itself with pollen, she also takes care to plant a barrier of long hairs in the entrance which small insects cannot pass. Then, again, the period of the opening and closing of the many flowers have relation to the time of day at which the pollen-carrying insect flies; the splashes and streaks of colour running from the open

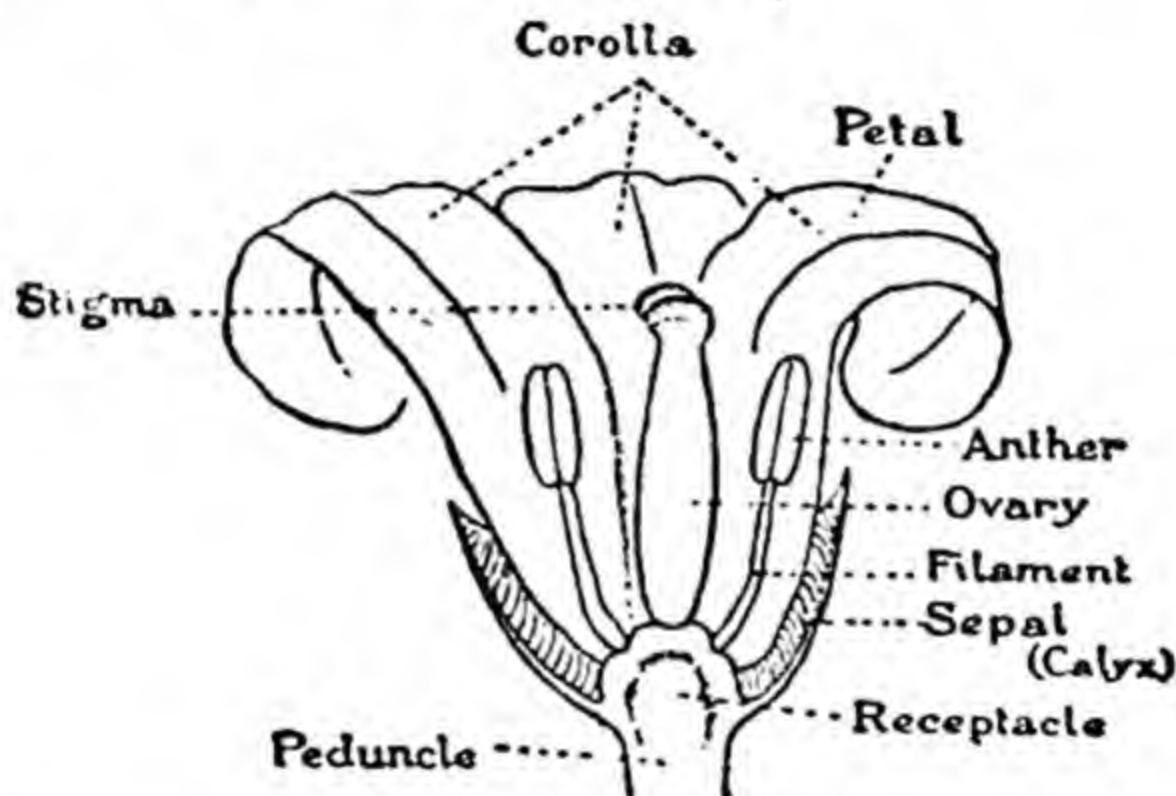


part of the flower towards the honey-glands serve as guiding lines, and even the very manner in which a flower is hung might, in most cases, be similarly explained.

It is to be hoped that these few specific instances will serve to whet the appetite of the flower-lover, and create a desire for a deeper knowledge of this most interesting subject by more closely considering the growing plant before plucking the flower.

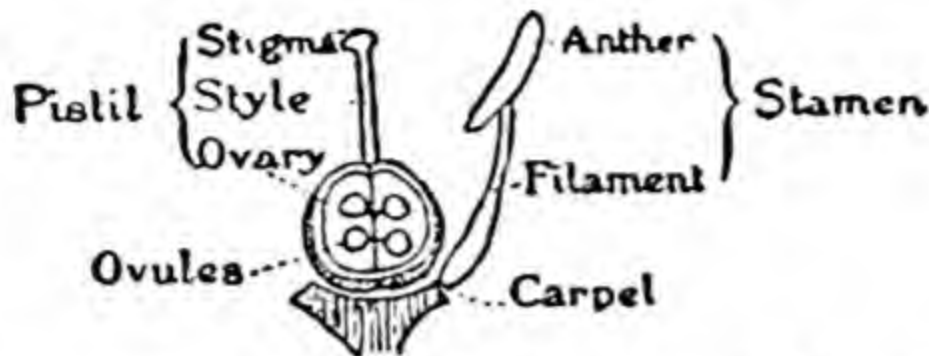
Regarding the forms of flowers and flower-grouping, a few simple diagrams and definitions are now given.

The first diagram shows a section of an imaginary flower, with its parts clearly marked.



Commencing from the flower-stalk (*peduncle*), whose large fleshy head is known as the *receptacle* there is the first series of floral organs, the *sepals*, known collectively as the *calyx*, and the succeeding series, the *petals* form the *corolla*. Sometimes all the *sepals* and all the *petals* are joined at the edges to form a tube or a cup, but usually in those cases their number is indicated by the lobes on the free margin. Within the corolla there is a series of very dissimilar organs, the *stamens*, and within these the *pistil*. The *stamen* consists of two portions, the *filament* or stalk, and the *anther* or pollen sac. *Pollen* is the mealy powder—the male element—by contact with which the *ovules* are fertilized. These ovules are contained in the lower portion

of the central or female organ. This—the *pistil*—consists of three portions, the enlarged base or *ovary* composed of one or more *carpels*, and containing one or more ovules; the slender



*style*, which is often absent; and its more or less viscid or hairy summit, the *stigma*. The stigma may be divided into two, three or more lobes, which correspond with the number of carpels of which the ovary is composed. A short description of the principal plans upon which flowers are arranged (*inflorescence*) upon the growing plant is now given. If a naked flower-stalk springs directly from the root and not from a leafy stem, it is said to be a *scape*. Should it be a mere continuation of a leafy branch, the flower-stalk is a *peduncle*; but should it, instead of bearing one flower, support several, each on its own little foot-stalk (*pedicel*), the main stalk becomes a *rachis*. If the *rachis* bears a number of flowers which are minus these pedicels they are said to be *sessile*, or sitting, and the inflorescence is a *spike*; but if all the flowers have pedicels and are arranged after the manner of the spike, the inflorescence is then a *raceme*. When these pedicels are branched and support two or more flowers on each, so as to give a light, loose aspect to the cluster, it is known as a *panicle*. Should the pedicels be of varying lengths and so arranged that all the blossoms in a cluster are brought pretty much to the same level, as in May-blossom, the arrangement is a *corymb*. When a similarly flat-topped cluster has its pedicels of pretty equal length, all radiating from a common point, like the inner ribs of an umbrella, it becomes an *umbel*. A number of small umbels are commonly associated in a precisely similar fashion, forming a *compound umbel*. Another frequent form of inflorescence is the *cyme*, in which a shoot terminates in a flower, and can therefore go no further; but it sends off side branches, each of which, however, comes to a full-stop in a like manner, though growth continues by means of the side shoots. The Daisy, the Dandelion, or any other of the

composite order of flowers will afford us yet another type of inflorescence in which a vast number of tiny flowers (*florets*) are packed together on a common platform; this kind is known as a *capitulum* or flower-head.



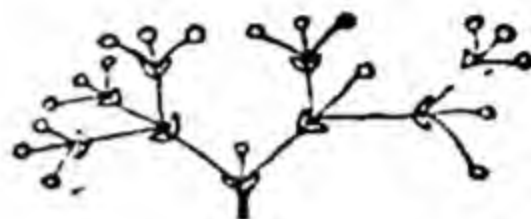
Spike



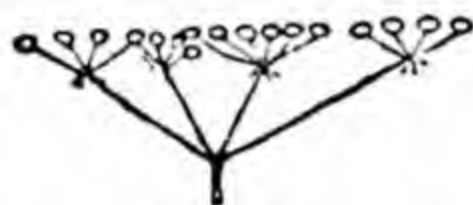
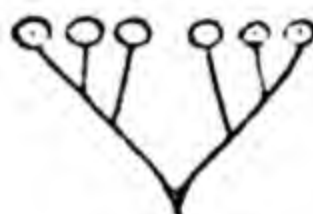
Raceme



Panicle



Cyme

Umbels  
Compound Umbel

Corymb

### Chief forms of flower clusters.

Having so fully, though briefly, dealt with the ordinary structure and natural grouping of flowers, the remaining descriptions of each species are dealt with, in their natural order, throughout the work.

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# GLOSSARY

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- Achene*.—A fruit like a little nut; a single carpel containing a single seed.
- Axil*.—The angle between a stem and the upper side of a leaf-stalk.
- Axillary*.—Formed in or growing from an axil.
- Bipinnate*.—When *pinnæ* are themselves pinnate.
- Bract*.—A modified or reduced leaf beneath a flower or flower-cluster.
- Bracteole*.—A diminutive bract.
- Carpel*.—A division of the ovary or seed-vessel.
- Cauline leaves*.—Leaves that arise from a stem, as contrasted with *radical* leaves, which spring direct from the rootstock.
- Cladode*.—A modified branch, resembling a leaf.
- Cleistogamic*, or *cleistogene*.—Flowers devoid of a corolla, and whose sepals never open, but which develop into fruits, nevertheless, as the result of self-fertilization.
- Compound*.—A leaf broken up into several leaflets. *Decom-pound*.—The leaflets themselves similarly broken up.
- Connate*.—When the bases of the opposite leaves are grown together.
- Digitate*.—Leaflets distinct, radiating from the leaf-stalk.
- Dimorphic*.—Used of flowers that appear in *two forms*, such as the Primrose, in which one form has a short style with anthers near the mouth of the corolla-tube, and the other form has a long style and anthers midway down the tube.
- Dioecious*.—When staminate and pistillate flowers are borne by different plants of a species.
- Entire*.—Having the margin undivided.
- Family*.—A group of genera, all of which agree in one or more striking characters, such as *Cruciferae*, in which there are twenty-eight British genera and over seventy species, all agreeing in the possession of four petals arranged crosswise.



- Filament.**—The stalk-like portion of the stamen, supporting the anther.
- Follicle.**—A dry one-celled and one-valved fruit containing more than one seed.
- Genus.**—An assemblage of species which all agree in *one or more* important structural characters and all bear the same primary name. Plural, *genera*.
- Glume.**—A chaffy envelope containing the essential organs of grasses.
- Hypogynous.**—When petals or stamens spring from beneath the base of the ovary, and are not attached to the calyx.
- Inferior.**—Used to denote that the calyx or corolla is free from and below the ovary.
- Inflorescence.**—The arrangement or grouping of the flowers on a plant.
- Involucre.**—A series of bract-like leaves below a cluster of flowers.
- Linear.**—A leaf that is long and very narrow, with parallel sides.
- Loculicidal.**—When the fruit splits down the middle of back of carpel.
- Lyrate.**—Deeply-lobed so that the outline is similar to that of a lyre reversed.
- Monoecious.**—Staminate and pistillate flowers produced by the same individual.
- Node.**—A point of the stem whence leaves arrive.
- Palmate.**—Lobed in the form of a hand.
- Pappus.**—A ring of hairs or scales around the top of the fruit, characteristic of the Family *Compositae*.
- Pectinate.**—Arranged like the teeth of a comb.
- Perfoliate.**—When a stem passes through the base of a stalkless leaf.
- Pericarp.**—A seed-vessel, including the adhering calyx if present.
- Perigynium.**—The floral envelope of a *Carex*.
- Phyllaries.**—The bracts or scales that form the involucre to a head of composite flowers.
- Pinnate.**—When the leaf is broken up into four or more distinct leaflets, arranged in two series along the midrib, as the leaf of Lady's-smock. Each leaflet is called a *pinna*; plural, *pinnae*.
- Pinnatifid.**—When the leaf is deeply cut into lobes, but not into separate leaflets. Example, Dandelion.
- Protandrous.**—When the stamens mature before the stigmas.
- Protogynous.**—When the stigmas mature before the stamens.

- Radical leaves.**—Leaves that arise directly from the rootstock, unconnected with stem or branch.
- Scape.**—A flower-stalk, usually leafless, arising directly from the rootstock.
- Scarious.**—Dry and translucent.
- Septicidal.**—When the fruit splits through the centre of each of its internal divisions.
- Sessile.**—Connected with the stem without an intervening foot-stalk. Used both of leaves and flowers.
- Simple.**—An unbranched stem; an undivided leaf.
- Spadix.**—An inflorescence where the flowers are arranged around a thick fleshy spike. Example, Cuckoo-pint.
- Spathe.**—The large bract that envelops certain flowers before opening. Examples, the hood of the Cuckoo-pint; the papery wrapper from which the Daffodil and Snowdrop buds emerge.
- Species.**—Individuals bearing certain characters in common.
- Spreading.**—When the petals of a flower open till they are at right-angles with the central column, they are spreading. Hairs standing out horizontally from a perpendicular stem are spreading.
- Stipules.**—Small leaves, always in pairs, at the base of the leaf-stalk in many plants. They serve to protect the young leaf in the bud, when they are relatively much larger.
- Superior.**—Used of the ovary to denote that it is above the attachment of the calyx; of the calyx, to denote that it adheres to the ovary and will become a part of the future fruit, as in apple and rose.
- Terminal.**—Flowers produced at the summit of a stem or end of a branch.
- Versatile.**—When the anther is connected to the filament by the centre of its back, so that it swings freely, as if balanced on a pivot.



## A PICTORIAL COLOUR KEY

Specially designed for easy identification of the flowers of the country-side.

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The nature-lover, in his rambles, will often meet with an unfamiliar plant, and the purpose of this Colour Key is to enable him quickly to identify the species by referring, first of all, to the various groups of colours, then to the Colour Plate and so to the description in the text.

## ORDER OF COLOURS

White or Whitish Flowers . . .	page 25
Shades of Pink . . .	33
Shades of Red . . .	35
Shades of Yellow . . .	38
Shades of Blue . . .	49
Shades of Purple . . .	52
Shades of Lilac . . .	59
Shades of Green . . .	60
Shades of Brown . . .	64



A 1 Traveller's Joy



Pl. 1 Wood Anemone



A 2 Water Crowfoot



Climbing Corydalis p. 78



A 5 Water-cress



A 6 Hairy Rock-cress



A 6 Jack-by-the-Hedge



Pl. 7 Common Scurvy-grass



Common Whitlow-grass p. 80



## WHITE OR WHITISH FLOWERS



A 7 Field Penny Cress



A 8 Shepherd's Purse



Pepperwort p 88



A 8 Sea-Kale



A 10 Bladder Campion



Common Pearlwort p 98



A 11 Heath Pearlwort



A 11 Sea Sandwort



A 12 Mouse-ear Chickweed



A. 12 Greater Stitchwort



Pl. 15 Wood Sorrel



A. 13 Corn Spurrey



A. 20 Barren Strawberry



A. 19 Meadow Sweet



A. 20 Wild Strawberry



A. 24 Three-fingered Saxifrage



A. 24 Grass of Parnassus



A. 25 Round-leaved Sundew



## WHITE OR WHITISH FLOWERS



A. 26 Wild Celery



A. 26 Burnet Saxifrage



A. 26 Common Water Dropwort



Goutweed p. 143



A. 27 Foot's Parsley



A. 27 Samphire



A. 28 Earth-nut



A. 28 Hog-weed



Hedge Parsley p. 150



A. 28 Beaked Parsley



A. 29 Wild Carrot



A. 29 Ivy



A. 30 Goose-grass



A. 29 Hemlock



A. 31 Hedge Bedstraw



A. 31 Woodruff



A. 35 Ox-eye Daisy



A. 33 Daisy

WHITE OR WHITISH FLOWERS



A 35 Scentless Mayweed



A 35 Corn Chamomile



A 35 Yarrow



A 47 Brookweed



A 48 Prisel



A 53 Toothwort



A 59 White Horehound



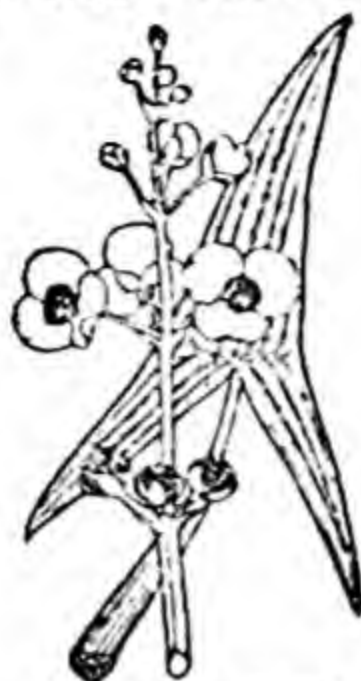
A 59 Bastard Balm



Shoreweed A 246



A. 64 Bastard Toadflax



A. 67 Arrowhead



A. 67 Frogbit



A. 68 Water Soldier



A. 68 White Helleborine



Narrow-leaved  
Helleborine p. 277



A. 69 Autumn  
Lady's-Tresses



Summer  
Lady's-Tresses p. 28



Creeping  
Lady's-Tresses p. 282





Pl. 71 Greater  
Butterfly Orchis



Lesser  
Butterfly Orchis p. 288



Pl. 73 White Fragrant Orchis



Pl. 75 Snowdrop



Pl. 76 Star of Bethlehem



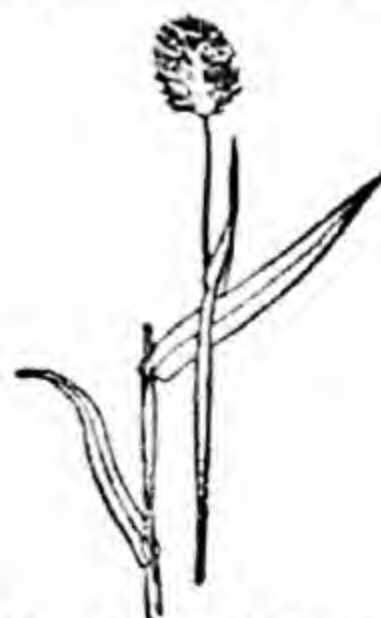
Pl. 76 Butcher's Broom



Pl. 77 Ramsons



Pl. 78 Cotton-grass



Pl. 79 Hare-tail Grass



Pl. 6 Lady's Smock



Pl. 13 Tamarisk



Pl. 15 Hemlock Stork's bill



Pl. 16 Pest Harrow



Pl. 17 Hare's-foot Trefoll



Pl. 20 Bramble



Pl. 22 Crab Apple



Pl. 22 Dog Rose



Pl. 23 Enchanter's Nightshade

## SHADES OF RED



Pl 32 Great Valerian

Pl 45 Small flowered  
Winter-green

Pl 36 Butterbur



Pl 46 Chickweed Wintergreen



Pl 50 Buckbean

Pl 47 Sea  
Milkwort

Cornish Monardella Pl 226



Pl 63 Knot-grass



Pl 67 Water Plantain



A. 1 Pheasant's-eye



A. 4 Common Red Poppy



A. 10 Maiden Pink



A. 16 Red Campion



A. 12 Sandwort Spurred



A. 11 Ragged Robin



A. 14 Tree Mallow



A. 14 Doves foot



A. 14 Marsh Mallow





Pl 17 Red Clover



Pl 18 Sainfoin



Pl 19 Grass Pea



Pl 22 Rose bay Willow herb



Pl 31 Spur Valerian



Pl 38 Musk Thistle



Pl 44 Cross-leaved Heath



Pl 44 Whortleberry



Pl 47 Pimpernel



Pl. 47 Bog Pimpernel



Pl. 49 Centaury



Pl. 50 Lesser Dodder



Pl. 50 Field Bindweed



Pl. 52 Hound's-tongue



Pl. 56 Lousewort



Pl. 59 Hedge Woundwort



Pl. 60 Red Dead-nettle



Pl. 61 Thrift or Sea Pink

## SHADES OF RED



R. 63 Amphibious Buckwheat



R. 65 Crowberry



R. 67 Flowering Rush

## SHADES OF YELLOW



R. 1 Common Meadow-rue



Mouse-tail p. 7



Lesser Spearwort p. 60



P. 2 Buttercup



P. 2 Marsh Marigold



P. 2 Lesser Celandine



P. 3 Globe-flower



P. 3 Barberry



P. 4 Welsh Poppy



P. 4 Yellow Water-lily



P. 4 Greater Celandine



P. 5 Horned Poppy





A. 5 Wallflower



A. 5 Winter Cress



A. 7 Treacle Mustard



A. 7 Charlock



A. 8 Woad



A. 9 Wild Mignonette



A. 9 Rock-rose



A. 13 Perforated St. John's Wort



A. 15 Furze



15 Needle-whin



16 Broom



16 Tall Melilot



17 Bird's-foot Trefoil



17 Hop Trefoil



18 Kidney-vetch



18 Horseshoe Vetch



20 Wood Avens



19 Yellow Pea



## SHADES OF YELLOW



A. 21 Cinquefoil



A. 21 Lady's Mantle



A. 21 Silverweed



A. 22 Agrimony



A. 24 Biting Stonecrop



A. 24 Golden Saxifrage



A. 26 Hare's ear



A. 27 Fennel



A. 28 Wild Parsnip



Alexanders O 152



A. 29 Mistletoe



A 30 Honeysuckle



A. 30 Wild Madder



A 31 Lady's Bedstraw



A 33 Golden Rod



A 34 Marsh Ludweed



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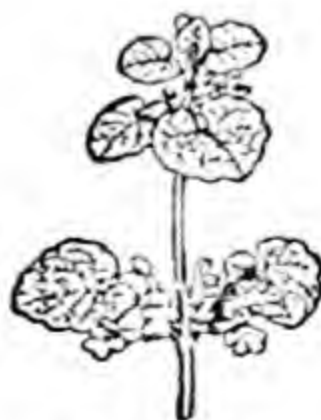
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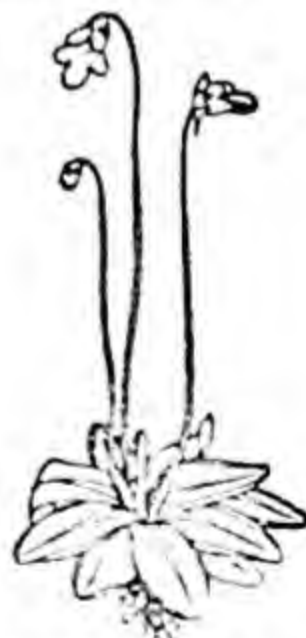
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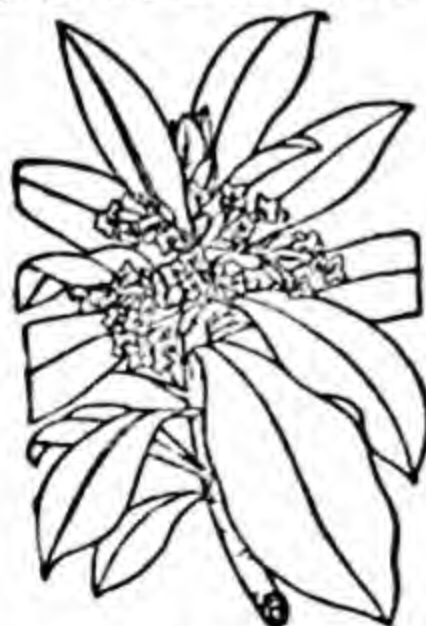
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# WILD FLOWERS OF THE WAYSIDE AND WOODLAND

## The Buttercup Family (*Ranunculaceae*) Plates 1-3

**CHARACTERS.**—Herbs, the only shrub being Traveller's Joy (*Clematis*). Stem-leaves, alternate except in *Clematis*, where they are opposite. Stipules, if present, attached to the leaf stalk by the whole of one side. Flowers, mostly regular, but in Larkspur (*Delphinium*) and Monkshood (*Aconitium*) they are irregular. Five and its multiples may be taken as the normal number of each kind of floral organ, but there are several departures from it. Sepals, always present and in more than two-thirds of the genera they are coloured like petals, which in these genera are absent and reduced to tubular nectaries. Stamens, numerous, except in Monsetail (*Myosurus*), and spring from below the ovary. Carpels, as a rule, many not connected, except in the Hellebores (*Helleborus*) and one-celled, developing into fruits of single-seeded achenes, or into follicles, containing many small seeds. In Baneberry (*Actaea*) alone the fruit is a many-seeded berry. Most of the species have acrid juices which protect them from the attacks of browsing animals.

### **Traveller's Joy** (*Clematis vitalba*) Plate 1

A climbing shrub found plentifully in England south of Denbigh and Stafford, especially in chalky districts. It climbs freely over the hedges by means of its leaf-stalks, which coil round any likely support. It is known by many other names—White Vine, Virgin's Bower, Old Man's Beard. The feathery awns of its seed-vessels are very noticeable in autumn and winter. It is the only shrub in the order of *Ranunculaceae* and the only British member of the genus, although foreign species are cultivated in gardens.

**Perennial:** Flowers, slightly fragrant, July to September.—Leaves, opposite and compound, the leaflets usually five, the stalks acting as tendrils. The flower has no corolla, but the



four thick downy sepals are coloured greenish-white to serve instead. The stamens are a crowd round the central cluster of many-bearded styles, which afterwards elongate into plummy tails and jointly form the "old men's beards."

The name is from the Greek *Klema*, a vine twig.

## Meadow-rue (*Thalictrum flavum*)

Plate I

Found in swampy fields and on banks of streams, bearing clusters of large bright yellow flowers on upright stems, two to four feet high. Extends from South of England to South of Scotland, and occurs locally in Ireland. The flowers are of a type between wind-pollinated and insect-pollinated; there is no provision of nectar, but those of the Common Meadow-rue are visited by flies and beetles for the sake of their abundant pollen.

*Perennial: Flowers July to August.*—Stout furrowed stems rise from a creeping yellow rootstock which sends out runners. Leaves, smooth, long-stalked, dull-green, somewhat pale on the lower surface, broken into three stalked divisions, each of which is broken into paired leaflets, wedge-shaped and ending in three lobes. Sepals, four, small, cream-coloured. Stamens, about twenty-four. Carpels, from six to ten, of the achene type, each producing a single seed.

LESSER MEADOW-RUE (*Thalictrum minus*), found in dry, sandy pastures and about sand-dunes. From six inches to a foot and a half high, with finely furrowed, branching stem. The greenish-yellow flowers droop and have only from three to five carpels. Leaflets, variable and of glaucous hue. Flowers from June to August.

GREATER MEADOW-RUE (*Thalictrum majus*), found in moist copses and stony places, especially in the North. From three to four feet high. Drooping flowers as in Lesser Meadow-rue, but the carpels are oval or elliptical.

ALPINE MEADOW-RUE (*Thalictrum alpinum*), found in boggy places far up the mountains in Wales and in the North. Flowers June to August. A diminutive plant, four to six inches high. The wiry, unbranching stem ends in a simple spray of purplish-white drooping flowers, with eight to twenty hanging stamens and only two or three curved carpels. Leaves, mostly from the roots, with long stalks and rounded leaflets, which have blunt lobes and are glaucous beneath.



## Wood Anemone or Windflower

*(Anemone nemorosa)*

Plate 1

One of the earliest spring flowers to be found in the oopse, by the woodside and in upland meadows. The Anemone has only one series of floral leaves, and although these are brightly coloured like petals, botanists regard them as sepals. They are white, delicately tinged with pink inside, and marked with purple outside. Occasionally the flowers are purple within and without. These flowers are one and a half inches across and are borne singly upon a stalk about six inches high—so hung that they turn their backs to the slightest breeze. Hence probably their name, from the Greek *anemos*, the wind.

*Perennial: Flowers March to June.*—Leaves, three wedge-shaped leaves are given off half-way up the flower-stalk, but these are involucral leaves and serve the purpose of protecting the bud over which they fold; the ordinary leaves are similar and are produced from the woody root-stem at a little distance from the flower-stalks, divided into three much cut and toothed leaflets. Sepals, four to nine; in the centre is a band of green pistils, each with its short, straight style, and these are surrounded by a ring of stamens. Fruit, nut-like bodies (achenes) containing a single seed.

PASQUE FLOWER (*Anemone pulsatilla*), found on chalk downs and limestone pastures in the district between Norfolk, Essex and Gloucestershire to York. Flowers May and June. It differs from the Wood Anemone in that it has a stouter root-stock, the divisions of the leaves are very slender, and the dull purple flowers do not spread their petals out. Flowers and leaves are clothed in silky hairs, and the leaves, produced in a rosette around the flower-stem, come after the flowers have faded.

BLUE ANEMONE (*Anemone apennina*) and YELLOW ANEMONE (*Anemone ranunculoides*), found occasionally, are not native species.

Pheasant's Eye (*Adonis annua*)

Plate 1

Pheasant's-eye is not a native plant, but an immigrant from the Continent. It is found especially upon chalky subsoil, and is well established in Suffolk and Southern England.

*Annual: Flowers May to September.*—Stem, erect and branching, attaining a height of eight or ten inches. Leaves, stalkless and much divided. Flowers, globular in form. Sepals, five purplish-green, spreading. Petals, more erect, five to ten,

blood-red. Stamens and carpels, numerous, the latter forming an oval head which lengthens after pollination. Fruit, a head of achenes. The name is derived from the Greek.

### Buttercup (*Ranunculus bulbosus*) Plate 2

The genus *Ranunculus* possesses distinct sepals and petals, normally five of each; but the petals are often one or more in number, of burnished golden yellow, with a little scale towards the base, which makes a pocket containing honey. There are three perennial species of *Ranunculus* to which the name of Buttercup is applied impartially.

UPRIGHT CROWFOOT (*Ranunculus acris*), with stems one to three feet high. Flowers June and July, and is found in meadows and pastures everywhere. The rootstock is more or less erect. The lower leaves are divided into wedge-shaped segments, which are again much cut up—the upper leaves less intricately so. Flower-stalk, *not* furrowed. Sepals, spreading. Petals, broad, and more or less flat when fully expanded.

CREEPING CROWFOOT (*R. repens*). Flowers May to August and is found in pastures and waste places. Rootstock, stout. Stem, one to two feet high, slanting, with long rooting runners. Flower-stalk, furrowed, sepals spreading, but petals less so than in *R. acris*.

BULBOUS CROWFOOT (*R. bulbosus*). Flowers from April to July, and is found in meadows everywhere. Stem, erect, one-half to one foot, with turnip-shaped swelling at base; no runners. Flower-stalk, furrowed. Sepals, turned down, nearly or quite touching the stalk. Petals, not spreading, but cup-shaped.

The name *Ranunculus* is derived from the Latin, *Rana*, a frog, in allusion to the damp meadows and the ponds where certain species are to be found in company with frogs. Most of the species possess acrid and poisonous juices which cause them to be avoided by cattle. The Water Crowfoot and the Celandine, however, are not acrid.

Other species with divided leaves :

HAIRY BUTTERCUP (*R. sardous*). Annual. Flowers June to October, and is found in damp ground chiefly in England. Erect growing with many stems, rising to a height from one-half to one and a half feet, and bearing many flowers which, though of the same size as the other Buttercups, are paler in colour. The furrowed flower-stalks and the sepals are covered with hairs,



Pl. 1.  
 1. Traveller's Joy (*Clematis vitalba*), p. 65. 2. Common Meadow-rue (*Thalictrum flavum*), p. 66.  
 3. Wood Anemone (*Anemone nemorosa*), p. 67. 4. Pheasant's-eye (*Adonis autumnalis*), p. 68.





1



2



which either stand out straight or have a downward tendency. The sepals are turned back against the stalk. The nutlets are much flattened, and bear a number of little knobs towards the margin.

**CORN CROWFOOT** (*R. arvensis*). Annual. Flowers May to July in cornfields. With erect stem as much as two feet high. The flower-stalks, though hairy, as in the last species, are not furrowed, and the rest of the plant is smooth. The flowers, are pale yellow, and only half an inch across; the petals half erect. The nutlets are covered with hooked spines. This species is considered to be the most acrid of the genus.

**SMALL-FLOWERED CROWFOOT** (*R. parviflorus*). Annual. Flowers May to August on dry banks south of Durham. A hairy species with spreading, leaning stems, little more than half a foot high, with more rounded, though divided, leaves. The flowers very small, not exceeding quarter of an inch, often less, with from three to five petals. Nutlets, covered with hooked prickles.

There are over twenty British species in the genus *Ranunculus*, of which the Lesser Celandine, the Lesser Spearwort and the Water Crowfoot are the most important.

### Lesser Celandine (*Ranunculus ficaria*) Plate 2

As soon as there comes a slackening of the iron rule of winter, whether it be early in February or late in March, then on sunny banks and at the feet of pasture-hedges, or on waste ground by the roadside, the burnished gold stars of the Lesser Celandine glitter in the wintry sunshine. It is a charming little plant in its brightness and compactness.

*Perennial: Flowers March to May everywhere.*—The leaves vary much in shape and in size. The larger, from the root-stock (radical), are more or less heart-shaped, the edges bluntly angled, marked with whitish patches, and sometimes with black or purple-brown blotches; the smaller ones, from the stem (cauline), may approach the form of an ivy-leaf. Sepals, from three to five, usually three. Petals, from seven to twelve. Stamens, numerous, as also are the carpels. Fruit, achenes, each containing a single seed.

### Lesser Spearwort (*Ranunculus flammula*)

There is nothing to connect this species at sight with the familiar Buttercups of the field and wayside. The stalked lower leaves are quite unlike the broad, divided foliage of those, being



oval, smooth and only occasionally are slightly toothed. As a rule the stems have a tendency to lie upon the wet ground and send out roots, then take an upward direction, so that when flowering they appear erect. They reach a height of six to twenty inches, much branched to provide supports for the abundant flowers, each with its own long stalk. The stem-leaves are more slender than those from the root, and are without foot-stalks, narrow-lance-shaped and with a few slight teeth.

*Perennial : Flowers May to September, and the blossoms are usually between three-quarters and one inch across. They consist of five concave sepals, five to seven bright yellow, shining petals, with a central group of carpels surrounded by numerous stamens, which mature in advance of the carpels. Fruit, nut-like achenes, each containing a single seed.*

GREATER SPEARWORT (*Ranunculus lingua*), twice the dimensions of *flammula*. It is rather less widely distributed, rather rare, and its habitat more exclusively marshes and the edges of lakes. It has a stout, hollow stem which stands erectly to a height between two and four feet. The lower leaves, which are under water, are broad heart-shaped with blunt tip; those on the stem are half-clasping, lance-shaped, from six to ten inches long, with or without teeth.

*Perennial : Flowers from June to September ; the blossoms are much like those of the Lesser Spearwort, but may be two inches across ; the carpels mature before the stamens.*

SERPENT'S-TONGUE SPEARWORT (*Ranunculus ophioglossifolius*), exceedingly rare, recorded as occurring in marshes in Hampshire and Gloucestershire. Annual. The yellow flowers appear from June to August ; though very numerous, they are only a quarter of an inch across. Petals only slightly longer than sepals. Stem, slender, from six to ten inches long, at first lying upon the ground, then rising erectly : furrowed and hollow. The lower leaves have long stalks, and are broadly oval or heart-shaped ; the stem-leaves, stalkless, oblong, clasping the stem.

### Water Crowfoot (*Ranunculus aquatilis*)

There are eight or more species in the aquatic section of *Ranunculus*, but the differences are slight, and we advise the beginner to commence by regarding the Water Crowfoots he meets in pond and stream as *aquatilis*, and by making a fairly extensive collection of examples from various localities, amass

material upon which he may found his own conclusions as to the validity of existing segregations about which authorities differ. The form we have given in Plate 2 is the sub-species known as *Ranunculus peltatus*. It is distinguished by having the floating leaves somewhat kidney-shaped in general outline, but divided into three lobes or three leaflets; the submerged leaves finely divided into stiff, hair-like segments, which do not collapse into a shapeless mass when taken from the water. These submerged leaves, though they appear to be little other than stalks, have scarcely any footstalk beyond what is hidden by the very large stipules.

*Perennial*.—It occurs in still waters, and flowers in May and June. Ponds are often found completely covered with the glossy, apparently greasy, floating leaves, and above them the straight flower-stalks and pure white flowers. Petals, broadly oval with yellow patch at base. Stamens, few.

### Mouse-tail (*Myosurus minimus*)

A rather rare plant of the cornfields and gravel-pits of the Eastern Counties. It is the only British species. The small yellowish flowers are clustered in dense spikes on leafless stalks from the roots.

*Annual: Flowers April to June*.—Leaves, slender, smooth and fleshy, direct from the root, and stand erectly. From the axils of these leaves, where they join the crown, arise many naked scapes, about five inches high, each supporting a single flower. Sepals, five narrow-oblong, each ending below in a little spur which is pressed closely to the scape. Petals, five short, strap-shaped, greenish-yellow, narrowed to a claw below. Stamens, few. Carpels, many, crowded on a thread-like spike, which elongates before the petals have dropped. When the carpels have matured into fruits (achenes), the spike may be as much as three inches long, when it presents the appearance that has suggested the name of the plant.

### Marsh Marigold (*Caltha palustris*) Plate 2

In marshes, river-meadows and wet copses in spring this is the most conspicuous plant. In some districts it is the King-cup, May-blob, Mare-blob and Marybud; in Scotland, the Luckan Gowan. The plant is poisonous, but the unopened flower-buds are sometimes pickled, and used as a substitute for capers.



*Perennial: Flowers March to May.*—It has a thick, creeping rootstock, and broadly heart-shaped glossy leaves with very large stipules and toothed edges. After flowering the leaves increase in size considerably, and in some places they reach an enormous size for so small a plant. The flower has no petals, but the five sepals are enlarged and richly coloured, as with gold, and burnished. The centre of the cup is occupied by a number of carpels, which are surrounded by an indefinite crowd of stamens, and develop after fertilization into as many follicles containing great store of seeds. The name is derived from the Greek *Kalathos*, a cup.

### Globe Flower (*Trollius europaeus*) Plate 3

The large, pale yellow blossoms of this plant at once suggest the Marsh Marigold. It is found only in moist places in the mountains in Wales, Scotland and the North; also the North of Ireland. It is known in Scotland as the Cabbage-daisy.

*Perennial: Flowers June to August.*—The principal leaves rise on long stalks from a perennial rootstock. The leaf-blade is circular in general outline, but cut up into five wedge-shaped segments, which are lobed and have their edges coarsely toothed; the stem-leaves are smaller and have no stalks. The unbranched flowering-stems vary from a foot to two and a half feet high, and are crowned by the solitary flower that owes its name to the fact that it does not open sufficiently to expose the inner organs. Sepals, from ten to fifteen, their tips overlapping to form the clear yellow globe. Petals, agree in number with the sepals, small and strap-shaped. Stamens, numerous. Carpels, five or more. Self-pollination is the rule owing to the closeness of the sepals; only small flies can effect an entrance. The name is the Latinized form of the old German word, a globe.

### Setterwort (*Helleborus foetidus*) Plate 3

This curious plant is known also as Stinking Hellebore, and is found in the chalk districts of Southern and Eastern England, but is not common. The flowers are rather puzzling at first sight, for the large purple-bordered sepals quite hide the small tubular petals, which are shorter than the many stamens. The petals are indeed turned into drinking-cups, for they are filled with nectar for the delectation of insect visitors. The flowers assume a globular form until after fertilization, when the

stamens and petals drop off, and the sepals spread. The flowers are numerous, borne in a loose panicle, and their odour is fetid. It is highly poisonous.

*Perennial: Flowers February to April.*—The large radical leaves are divided into a number (five or six) of narrow leaflets; those that occur on the upper part of the flowering stem are more or less reduced to the condition of divided bracts. Sepals, five, yellowish-green tipped with purple. Petals, small, tubular. Stamens, many.

BEAR'S-FOOT, or GREEN HELLEBORE (*H. viridis*), is a smaller plant with fewer flowers, and only the root perennial. Its yellowish-green sepals are more spreading than those of *foetidus*, and the flowers are less drooping than in that plant. Flowers February to April. Highly poisonous.

'*Elleboros* was the Greek name of these plants.

## Columbine (*Aquilegia vulgaris*)

Plate 3

It is a difficult thing to decide, when one has found the Columbine growing wild, whether it is not a garden escape that has increased and become naturalized. One should always be chary of assuming its true wildness, if it is found near an existing house or the site of a former dwelling. But that the Columbine is a true native of woods in England and Ireland there can be no doubt. There is only one native species.

*Perennial: Flowers May to July.*—The radical leaves grow in bundles from a rootstock, each leaf-stalk spreading out at its base into wings which enwrap the next newer leaf, and from the centre of the bundle rises the flowering stem. The long-stalked leaves are divided into two or three portions, each stalked and again cut into small leaflets which are lobed and toothed; they are of a glaucous hue. The long flower-stalks are leafy, and bear many flowers in a panicle, all drooping. The flower parts are in fives. Sepals, thin and broad, coloured dull purplish or blue like the petals. Petals concave, terminating at the back in a curved hollow tube, with a hollow knob at the end in which honey is secreted. The ovary consists of five carpels, each with its own style and stigma. The stamens mature before the stigmas, so that cross-fertilization takes place. Fruit, the carpels develop into dry leathery bags (*follicles*), which split along the upper edge and disclose a large number of very glossy, greenish-black seeds. The name is derived from the Latin, *aquila*, an eagle, which the flower is supposed to resemble.



## The Barberry Family (*Berberidaceae*) Plate 3

**CHARACTERS.**—Herbs or shrubs, our only native example being a shrub. Leaves alternate. Flowers regular. Sepals coloured like petals, but petals also are present. They are in multiples of two or three, and have two nectar-glands at the base of each. The stamens agree in number with the petals, and their anthers open by two little valves to discharge their pollen. There is a single one-celled carpel, with a broad stigma, developing into a berry containing one or two seeds.

### **Barberry** (*Berberis vulgaris*) Plate 3

The Common Barberry is a spiny shrub, growing in hedge and copse, and brightening the spot from April to June with its strings of pale yellow flowers, and later in the year with its oblong red berries. Its shoots attain a height of from six to eight feet, and are clothed in a whitish bark, the wood being yellow. It is the only British representative of the genus and the Order.

*Perennial : Flowers April to June.*—Leaves, egg-shaped, with the narrow end nearest the short stalk, and edges armed with spine-like teeth. Sepals, eight or nine. Petals, six. The outer sepals are very small, and liable to be overlooked. The petals are in two series, and at the base of each petal are two honey-secreting glands, which induce the visits of honey-loving insects. There are six stamens, which ordinarily lie along the centre of the petals, their bases highly irritable. Fruit, berries about half an inch long, of an acid quality, but an excellent preserve is made from them. *Berberis* is the Arabic title of the plant.

## The Water-lily Family (*Nymphaeaceae*) Plate 4

**CHARACTERS.**—Aquatic herbs, with stout fleshy rootstocks and floating leaves. Flowers, solitary and regular, on a long scape. The floral organs all either spring from below the carpels (*Nymphaea*), or are attached to a fleshy disk in which the base of the carpels is also sunk (*Castalia*). Sepals, from three to six. Petals from three to an indefinite number. The stamens are also numerous, as are the carpels, which unite to form a many-celled ovary, on whose top the united stigmas form a rayed disk. The fruit is a berry that ripens above (*Nymphaea*), or under water (*Castalia*).

### **Yellow Water-lily** (*Nymphaea luteum*) Plate 4

In some districts, where the Yellow Water-lily floats on the bosom of ponds and sluggish streams, it is known as the



Brandy-bottle, partly by reason of its unpleasant odour and partly on account of its flagon-like seed-vessel. It has a thick fleshy rootstock, which creeps in the mud, and is rich in tannic acid; it is said to be a fatal lure to cockroaches if bruised and soaked in milk. Some of the leaves are submerged, and these are thin, but the floating ones are thick and leathery.

*Perennial: Flowers June to August.*—Leaves, heart-shaped, the lobes not far apart: the stalks somewhat triangular in section, and traversed by a great number of fine air-canals, as are the flower-stalks also, to give them buoyancy. Sepals, yellow, five or six in number, very large and concave. Petals, much smaller, about twenty; they produce honey at their base. The stamens are even more numerous than the petals, in several rows, their blunt tips bent over away from the many-celled ovary. The stigma is rayed. The fruit ripens above water, and is flagon-shaped; the seeds are imbedded in pulp. The Water-lilies were dedicated to the Nymphs by the Greeks. Hence the name of the genus.

The WHITE WATER-LILY (*Castalia alba*), though constituting the British representative of a distinct genus, is closely allied. It has only four sepals, which are green without and white inside, and the petals are without the honey-gland at their base. The round fruit ripens under water, and each seed is invested by a fleshy aril—after the manner of the "mace" around a nutmeg.

### The Poppy Family (*Papaveraceae*) Plates 4 and 5

**CHARACTERS.**—Herbs with milky or coloured juice. Leaves alternate without stipules. Flowers, regular, and consist of two concave sepals, four petals, numerous stamens, and a one-celled ovary, the stigma forming a rayed disk. The sepals fall on the opening of the bud, in which the petals lie crumpled, not folded as in most flowers; petals and stamens also drop away when the flower has been open a short time. The stamens have slender filaments supporting the anthers, and are hypogynous; the anthers open at their edges. Though the ovary is, strictly speaking, one-celled, it is practically divided into two or four cells by the ingrowth of partitions (*placentas*) from the walls, to which the seeds are attached. It develops into a capsule, the familiar Poppy-head, which opens by the contraction of small valves under the lobes of the stigma. Seeds small and very numerous.

### Common Red Poppy (*Papaver rhoeas*) Plate 4

The plants comprised in the genus are all annual herbs, with milky juice of a narcotic nature. The flowers are borne on

very long and slender stalks, and consist of two concave sepals, which are thrown off by the expanding of the four crumpled petals. The pistil, which afterwards develops into the familiar "poppy-head," is surmounted by the many stigmas which form a rayed disk. There are four native members of the genus:

I. The COMMON POPPY (*P. rhoeas*), which is so abundant in cornfields south of the Tay, has branched bristly stems and pinnate leaves, the points of the lobes directed upward and ending each in a bristle. The bristles on the flower-stalks stand out at right-angles, or nearly so. This is an important character. The glorious scarlet flowers are large (three or four inches in diameter), the petals in two unequal pairs. Rays of stigma, eight to twelve. Capsule, smooth and short, slightly stalked above the receptacle. Annual. Flowers June to September.

II. ROUND ROUGH-HEADED POPPY (*P. hybridum*). Leaves, only slightly bristly. Flower, small (one to two inches), scarlet, with a black patch at the base of each petal. Stigmatic rays, four to eight. Capsule, more globose than the preceding species. Found in dry sandy and chalky fields south of Durham and Carnarvon. Annual. Flowers May to July.

III. LONG PRICKLY-HEADED POPPY (*P. argemone*). Similar to the last, but smaller and weaker in all respects—in fact, our smallest species. Petals, narrow and paler in colour. Capsule, bristly, club-shaped. Stigmatic rays, four to six. Found in cornfields. Flowers May to August.

IV. LONG SMOOTH-HEADED POPPY (*P. dubium*). Similar to *P. rhoeas*, but the bristles are pressed against the stalk upwards. Flowers, large. Petals, broad, but in unequal pairs, light scarlet. Stigmatic rays, six to twelve. Capsule, slender, smooth, tapering downwards, not stalked above receptacle. Found in cornfields. Flowers May to August.

The OPIUM POPPY (*P. somniferum*), with glaucous foliage, and flowers varying from blue-purple to white, is plentiful in some localities. It is not a native, but an escape from cultivation.

### Welsh Poppy (*Meconopsis cambrica*) Plate 4

Western Poppy would, perhaps, be the more appropriate name for this plant, as its natural range extends as far north as Yorkshire (doubtfully to Westmorland) and is continued southwards through Wales and Somerset to Devon and Cornwall; in Ireland it occurs only locally. Its favourite haunts are beside rills and rivulets, moist glens and shady rocky places.









Unlike our red Poppies, which are all annuals, the Welsh Poppy is a perennial, and its stout, branching rootstock, after a few years, becomes a large tuft.

*Perennial: Flowers June to August.*—Many radical leaves rise from the rootstock on long stalks, pale green above and glaucous beneath, cut from the sides into a number of oval lance-shaped segments, which in turn are lobed and toothed. From the stem, which has a woolly base, arise the pale yellow flowers, each on a long footstalk, making the entire height of the plant a foot to two feet. The expanded flower measures two or three inches across. In structure it agrees closely with those of the genus *Papaver*: there being two hairy sepals and four roundish petals, on which lie the numerous stamens encircling the large ovary with its four or six stigmatic rays. Stamens and stigmas mature at the same time. The ovary develops into an ovoid seed-capsule with four to six short valves opening below the stigmas for the release of the small wrinkled seeds.

The botanical name is compounded of two Greek words, *mekon* and *opsis*, indicating its likeness to a Poppy.

### Greater Celandine (*Chelidonium majus*) Plate 4

The Greater Celandine is not even distantly related to the Lesser, the latter being a buttercup and the former a poppy. They were given the same name apparently because both are in flower at the time the swallow (*Chelidon*) returns to our shores. The Greater Celandine is a plant of the hedgerow and waste ground, near habitations. The yellow juice, which is very acrid and poisonous, had formerly a reputation as an eye medicine, and as a caustic for the burning away of warts. It is the only British species of this genus.

*Perennial: Flowers May to August.*—Leaves, much divided, the leaflets deeply lobed, with a resemblance to an oak-leaf. Flowers, small, yellow, combined in umbels, borne on a long stalk. Sepals, two. Petals, four, as in *Papaver*. Fruit, a long pod with two valves, which separate from the base upwards.

### Horned Poppy (*Glaucium flavum*) Plate 5

This is a plant of sandy seashores, where it forms one of the most striking items of the vegetation with its blue-green leaves and bright yellow flowers three or four inches across. It is the only British species, and is not found north of the Forth and Clyde. It attains a height of two feet.

*Biennial : Flowers June to October.*—Stems, branching in all directions. Leaves, blue-green, large and boldly lobed and cut, clasping the smooth stem by their bases ; thick and leathery in character. Sepals, two concave, thrown off when the flower opens, as in *Papaver*. Petals, four golden-yellow, forming two pairs, one larger than the other. The ovary is long and narrow, the two-lobed stigma stalkless. The ovary develops into a long, two-valved pod, from six inches to one foot in length.

The name is from the Greek, *glaukos*, blue, in allusion to the blueness of its green.

### The Fumitory Family (*Fumariaceae*) Plate 5

**CHARACTERS.**—Herbs with watery juice, and (usually) divided leaves. Flowers irregular, borne in racemes. There are two small sepals, more like scales than floral organs, and these are cast off on the expansion of the flower. The four petals form two unequal pairs, one or both of the outer and larger swollen at the base or ending in a spur ; the inner and smaller are erect, and in the British species joined at their tips. There are six stamens, combined in two bundles, the central one of each bundle having a two-celled anther ; the other anthers one-celled. The ovary is one-celled. There are only two native genera, which differ principally in the characters of the fruit. In *Fumaria* this is a single-seeded and globose nut, but in *Corydalis* it is a many-seeded capsule which opens by two valves. The British species of *Fumaria* also are all annuals ; those of *Corydalis* are perennials.

#### **Fumitory** (*Fumaria officinalis*) **Plate 5**

The plant is common in dry fields and waste places throughout the three kingdoms, and, indeed, over a great part of the earth, for it is a plant that has followed close in the wake of cultivation. It had formerly a great reputation in medicine.

*Annual : Flowers May to September.*—Leaves, thin and much divided. Flowers, rosy purple, in racemes. Each consists of a couple of small sepals, and four petals arranged in two unequal pairs ; the upper petal is spurred at the base, the lateral pair connected by their tips and completely enclosing the stamens and pistil.

From the Latin, *fumus*, smoke, on account of the light character of the plant.

#### **Climbing Corydalis** (*Corydalis claviculata*)

This is known also as Climbing Fumitory and is the only other British species of *Fumariaceae*. It is one of the most delicately



constructed and graceful of our flowering plants. Although it is distributed from south to north of England and well into the northern parts of Scotland, as well as in north-eastern Ireland, it is not common and must be looked for in bushy places, on hill-sides and banks where the soil is moist or boggy. It climbs by means of highly sensitive tendrils which are an extension of the midrib of the leaf.

*Annual: Flowers June to August.*—Leaves, relatively large, but broken up into several stalked leaflets, which are again divided into three, four or five ovals of a glaucous tint. The tiny creamy-white flowers form little sprays which stand out from the stem opposite to a leaf. Their structure is like that of the Fumitories, the distinction between the two genera being based on differences in the character of the fruits. There are two small, scale-like sepals; four petals (two large and two small); six stamens in two sets of threes. The single-celled ovary develops into a two-valved pod, containing numerous small, shining seeds. The first-formed leaves do not develop tendrils. *Corydalis* is an old Greek plant name.

**YELLOW CORYDALIS** (*Corydalis lutea*), a more robust plant, with yellow flowers from May to August, more than twice the size of those of the previous species, and the **TUBEROUS CORYDALIS** (*Corydalis bulbosa*), with relatively large purple flowers, in April and May, and only a few glaucous leaves about the middle of the stem, are Continental species, and, when found wild, escapes from gardens.

## The Wallflower Family (*Cruciferae*) Plates 5-8

**CHARACTERS.**—A large family of herbs, rich both in genera and species, the British representatives being about eighty species in five and twenty genera. They have radical or alternate leaves, and the flowers in racemes. The distinctive character of the family is found in the flowers, which have four sepals and four petals, arranged in pairs at right-angles, like the arms of the Maltese cross—hence the family names. The flowers are almost, but not quite, regular, for two of the sepals have a bulging at the base. The sepals stand erect with their edges touching, and so form a sort of tube which supports the slender and weak "claw" of the petals, whose "limbs" spread out from the top of the calyx. There are six stamens, attached below the ovary, of which one is placed in front of each bulging sepal, whilst the remaining four, which are taller, stand in pairs before the other sepals. There are also honey-glands on the disk before each sepal. The ovary is normally one-celled, but in most cases it becomes two-celled by the

extension of the *placentas* or partitions to which the ovules are attached. The fruit is the well-known pod familiar to all in the seed vessels of the Wallflower, Cabbage, etc., which opens by two valves that drop off when the seeds are ripe. This pod takes various forms in different genera.

### Wallflower (*Cheiranthus cheiri*)

Plate 5

This is not a British plant, though it appears to have been introduced to England about 1573. It is found growing on cliffs and walls. In some districts it is known as Gillyflower, but old writers who use the name Gillyflower refer to the Clove Pink, and in the present day the plant usually intended by the term is the Garden Stock.

*Perennial: Flowers May to June.*—Sepals, very long, stiff, and erect. Petals, arranged crosswise, that part hidden within the calyx being a weak, narrow claw. Honey is secreted by glands on the receptacle at the base of the lateral stamens. The long ovary is surmounted by the two-lobed stigma, and develops into a long pod, two or two and a half inches long, containing a large number of reddish seeds.

Probably from the Greek, *cheir*, the hand, and *anthos*, flower.

### Winter Cress (*Barbarea vulgaris*)

Plate 5

Under the name of Land Cress, to distinguish it from *Nasturtium officinale* (the Water Cress), *Barbarea vulgaris* had once a fair reputation as a salad herb. In general appearance it is not very unlike Water Cress, showing a tuft of glossy, pinnate, dark-green leaves throughout the winter months, and from its heart sending up an erect, angular, leafy stem in spring, which bears dense racemes of small yellow flowers on axillary branches. It is common on damp waste places.

*Perennial: Flowers May to August.*—Stem-leaves, very variable; some have merely a wavy margin, a couple of lateral lobes and ears (*auricles*) at the base; the larger ones have a big terminal lobe, and the lower portion is deeply cut in a pinnate manner. The lower leaves are truly pinnate, with a larger terminal leaflet. The flower consists of four equal sepals, which are almost erect when the flower is open, not spreading widely. The four petals have the lower portion reduced to what is called a "claw." Fruit, long, slender pods, compressed, and squarish in section, ending in a more slender point, the remains of the style. The genus is named after St. Barbara.





Pl. 5.

1. Horned Poppy (*Glaucium flavum*), p. 77. 2. Fumitory (*Fumaria officinalis*), p. 78.  
 3. Wallflower (*Cheiranthus cheiri*), p. 80. 4. Winter Cress (*Barbarea vulgaris*), p. 80.  
 5. Water-cress (*Nasturtium officinale*), p. 81.

E. 80.



**Water-cress** (*Nasturtium officinale*) Plate 5

An aquatic herb, found in all districts of the British Isles where there are watercourses.

*Perennial: Flowers May to October.*—Stem, hollow, under favourable conditions may be nearly an inch thick and from two to four feet long, floating on the water or creeping on the mud and rooting from the lower side. Leaves, long, narrow, broken up into three to six pairs of roundish heart-shaped leaflets with the edges toothed slightly, and a much larger odd leaflet at the end of the midrib. Where growing exposed to strong sunlight, they take on an olive-brown coloration. Flowers, small, white, clustered in short racemes at the ends of the stem or branch. Sepals, half the length of the four petals. Fruit, slender, two-valved pods.

There are two departures from the typical form, so marked that at times they have been treated as distinct species; but the differences appear to be due to the special conditions under which they are growing. When luxuriant, the stem may become erect and tall, and the leaves so large that the plant resembles somewhat the Water-parsnip: it is known therefore as the var. *stifolium*. On the other hand, through growing on land, it may have a starved appearance, with slender stem and very small leaflets, when it is called var. *microphyllum*.

Our other two species of the genus have yellow flowers.

**CREeping YELLOW-CRESS** (*Nasturtium sylvestre*), found on river-banks and moist places, flowering from June to August. It has a creeping rootstock and an angular, wavy stem from six inches to a foot and a half long. The variable leaves have oblong or lance-shaped leaflets. The flowers are in short sprays; the petals twice the length of the sepals. Pods slender.

**Marsh Yellow-cress** (*Nasturtium palustre*) has a more or less erect stem, a foot to two feet long, with lyre-shaped leaves cut into a few broad lobes, of which the terminal lobe is very large. The flowers, found from June to October, are very small, and the petals are no longer than the sepals, and may be shorter. The pod is oval or oblong and inflated.

The name *Nasturtium* is from the Latin *Nasi tortium*, nose twisting, in allusion to the grimaces produced by eating the hot, bitter leaves.

**Hairy Rock-cress** (*Arabis hirsuta*) Plate 6

The Rock Cresses, of which we have four native species, are lovers of dry rocky places, wall-tops, and the like. They are



among the plants that ordinary flower-lovers neglect as "uninteresting," because generally inconspicuous. The Hairy Rock-cress is the most widely distributed species. It is generally distributed in Great Britain, but is only of local occurrence in Ireland. In Scotland it has been found in the mountains as high up as 2,700 feet. It is covered with short, coarse hairs.

*Biennial: or perennial—Flowers June to August.*—Stems, slender, leafy, from one to two feet in length. The radical leaves form a rosette, and are scarcely stalked; they may be as much as three inches long. The stem-leaves are quite stalkless, and partly clasping the stem. Flowers, small, white. Sepals, short. Petals, white and spreading. They are succeeded by slender, erect pods. The seeds, which form a single row, have a narrow wing all round them.

There is a species known as *Arabis ciliata*, in which the hairs are wanting or reduced to delicate cilia found only on the rocky coasts of South Wales and the West of Ireland. The other species are very rare.

The generic name said to be from Arabia.

### Lady's Smock (*Cardamine pratensis*) Plate 6

In all moist meadows and swampy places, from March to June, the eye is pleased with a multitude of waving flowers which in the aggregate look white, but at close quarters are seen to be a pale pink or lilac. They are Shakespeare's "Lady's smocks all silver-white," that "paint the meadows with delight." The modern country name in many places is Milkmaids, or Cuckoo-flower.

*Perennial: Flowers March to June.*—Leaves, cut up into a variable number of distinct leaflets; those from the roots having the leaflets more or less rounded, those from the stem longer and narrower. The radical leaves as they lie on the wet ground root at every leaflet, and develop a tiny plant from the axil of each. The plant sometimes sends off runners from the rootstock. The flowers are nearly three-quarters of an inch across. There are four other native species:

HAIRY BITTER CRESS (*C. hirsuta*), with white flowers, eighth of an inch in diameter, anthers, yellow. In similar situations to *C. pratensis*. Flowers March to September.

LARGE-FLOWERED BITTER CRESS (*C. amara*), with creamy white flowers half an inch in diameter; anthers, purple. It has a slender rootstock, which sends off runners. Riversides; rare. Flowers April to June.



**NARROW-LEAVED BITTER CRESS** (*C. impatiens*, white flowers, quarter of an inch across, often borne in a panicle; anthers yellow. Shady copses, local, southwards from Yorks and Westmoreland. Flowers from May to August. It is readily distinguished by the fringed auricles at the base of the leaves, which are not present in the other species, and by the explosion of the pod when touched.

**CORAL ROOT** (*C. bulbifera*) (Plate 6), with a creeping rootstock covered with thick, fleshy, white scales. The unbranched stem may be a couple of feet in length. The leaves less divided; the lower ones having only one or two pairs of leaflets, whilst the upper ones are undivided and bear in their axils little bulbs, which drop off and perpetuate the plant. The flowers, which appear from April to June, are rather larger than those of *C. pratensis*, and usually of a darker lilac, though they may be white. It is a rare plant of wood and copse, with a range southward from Stafford to Kent and Sussex; it also occurs in Scotland. By some authors separated as *Dentaria bulbifera*.

Name from the Greek *Kardamon*, a kind of water cress.

### Jack-by-the-Hedge (*Sisymbrium alliarica*) Plate 6

Jack-by-the-Hedge rejoices in the *aliases* of Garlic-mustard and Sauce-alone. It is a plentiful hedgerow weed. An erect-growing, fresh-looking plant, though at first its stems had an inclination to grovel instead of rising. It has a strong smell when bruised, suggestive of garlic.

*Biennial: Flowers May and June.*—Leaves, more or less heart-shaped, with rounded teeth at the edges, on long stalks of soft texture, and hairy beneath. Flowers, small, white, the four petals arranged crosswise. The pods are about two and a half inches long, slightly curved, the valves being keeled, which gives a four-angled appearance to the pod. Other native members of the genus are:

**THALE CRESS** (*S. thaliana*). Another common hedgerow and wall-top weed, with few leaves and inconspicuous white flowers. Radical leaves, oblong, toothed, stalked, forming a rosette. Stem leaves stalkless, narrow, all downy. Flowers, eighth of an inch diameter; May to September. Pods, half to three-quarters of an inch, curved.

**HEDGE-MUSTARD** (*S. officinale*). Leaves deeply cut or lobed, toothed, hairy. Stem round, erect, with horizontal branches. Flowers very small (tenth of an inch), pale yellow. Pods, half

an inch, round, awl-shaped, close to stem. Flowers June and July.

**FLIXWEED, or FINE-LEAVED HEDGE-MUSTARD** (*S. sophia*). A tall plant growing among rubbish shot on waste places, as much as three feet high, with leafy branches and much divided leaves, the segments very fine. Flowers, small (eighth of an inch), yellow, succeeded by slender, rounded pods (one inch), with three ribs on each valve. Flowers June to August.

**LONDON ROCKET** (*S. irio*), so called because it sprang up abundantly in the Metropolis immediately after the Great Fire of London (1666). Approaching *S. officinale* in habit and character of leaves. Flowers, yellow. Pods, slender, smooth, round, two inches long; valves as in *S. sophia*. Flowers May to September.

Name, Greek, believed to have been applied to a species of cress.

### Treacle Mustard (*Erysimum cheiranthoides*) Plate 7

A neglected plant that grows in the waste places of fields and roadsides. It is covered with short, forked hairs which impart a frosted appearance. It is not uncommon in the southern half of England, but in the northern half and in Ireland it is rare. This is the only British species.

*Annual: Flowers June to August.*—Stem, round, straight, leafy, from one to two feet. Leaves, narrow, lance-shaped, scarcely stalked, narrower at the base, the margins faintly toothed. Flowers, small, about a quarter of an inch across. Petals, clawed, yellow. The pods are about one inch in length, slender and square; the valves with a prominent keel, nearly erect.

The name of the genus is said to be from the Greek, *eruo*, to draw, in allusion to its former use as a blistering agent.

### Charlock or Wild Mustard

(*Brassica sinapistrum*)

Plate 7

Charlock is a weed that likes the comparatively light and dry soil of the ploughed field, and its yellow blossom is very conspicuous in upland cornfields.

*Annual: Flowers May to August.*—Leaves, rough lyre-shaped, with boldly-toothed edges. Petals, bright yellow. Fruit, an angular pod, with a straight beak, not persistent, and two hairy



Pl. 7.  
 1. Treacle Mustard (*Erysimum cheiranthoides*), p. 84. 2. Charlock (*Brassica sinapistrum*), p. 84.  
 3. Common Scurvy-grass (*Cochlearia officinalis*), p. 85. 4. Field Penny-cress (*Thlaspi arvense*), p. 85.







valves, but containing only one row of dark-brown seeds. There are seven British species.

**BLACK MUSTARD** (*B. nigra*). Stem, *bristly*. Upper leaves very narrow, lance-shaped, smooth, with entire or toothed margins. Flowers, yellow. Pods awl-shaped, quadrangular. Beak short and slender, containing no seeds. Valves keeled. Seeds reddish-brown, oblong. Flowers June to September in hedges and wastes.

**WHITE MUSTARD** (*B. alba*). Hairy, like *B. sinapistrum*, but the hairs pointing downwards. The upper leaves deeply lobed, lyre-shaped, the lobes being again cut and lobed. Pod short, no longer than the flat, thin, or sword-shaped, ribbed beak. Seeds larger than the last, more globose, yellow. Flowers June and July in cultivated ground.

The Mustards are sometimes separated as the genus *Sinapis*.

**WILD CABBAGE** (*B. oleracea*). Stem stout and twisted, one to two feet high. Lower leaves, egg-shaped, more or less lobed, fleshy, smooth, as much as eighteen inches long; upper more oblong, with broad base, stalkless. Flowers, pale yellow, one inch across; May to June. Pods, two or three inches long, with awl-shaped beak. Parent of all the cultivated forms of cabbage, kale, savoy, and cauliflower. South-west coasts of England and Wales; also Whitby and Staithes, Yorks. Perennial or biennial.

**NAVY** (*B. campestris*). Lower leaves lyre-shaped, bristly, glaucous; upper lance-shaped, clasping the stem. Flowers, pale orange, June to September. Fields. There is a species, *B. rapa* (the Turnip), which has a tuberous root, the leaves not glaucous, and the flowers smaller and bright yellow.

The other species are rare and local.

### Scurvy-grass (*Cochlearia officinalis*) Plate 7

Scurvy-grass was so-called on account of its former prescription as the antidote to the scorbutic troubles of our seafaring folk. They are annual or perennial herbs. Flowers May to August. Formerly it was considered that we had but one species that varied according to the conditions under which it was growing; but now it is more normal to divide them into five species. These are:

**COMMON SCURVY-GRASS** (*Cochlearia officinalis*), growing about sea-shores, with several smooth and fleshy stems from four to

ten inches high, ending in a spray of small white four-petalled flowers, each a third of an inch across. The radical leaves are more or less heart-shaped, varying to round and kidney-shaped, with long stalks. The stem-leaves are stalkless, clasping the stem, and lobed or toothed. The seed-pods are nearly round, tipped with the very short style, and the valves are netted.

ALPINE SCURVY-GRASS (*Cochlearia alpina*), a similar but more slender plant with smaller leaves, and the pod is two or three times as long as broad, tapering at each end. It is found only on mountains.

DANISH SCURVY-GRASS (*Cochlearia danica*) has all the leaves with stalks, though those of the uppermost are very short. The radical leaves are more triangular. The swollen pods are of similar shape to those of *alpina*. Muddy and sandy shores: less frequent in Scotland and Ireland.

ENGLISH SCURVY-GRASS (*Cochlearia anglica*) is a much larger plant than *officinalis*, with stems a foot to a foot and a half long, the leaves narrower and more fleshy; the flowers larger, and the inflated, oblong pods twice the size. Muddy shores in England and Scotland; rare in Ireland.

NORTHERN SCURVY-GRASS (*Cochlearia groenlandica*) is a small, tufted plant with many fleshy, roundish-kidney-shaped radical leaves, found only in a few localities by the sea in the north of Scotland and County Donegal.

The Latin name *Cochlearia* refers to the spoon-shape of the lower leaves.

### Whitlow-grass (*Draba verna*)

Common Whitlow-grass is at once one of the smallest and, one of the earliest of our flowering plants. Its favourite resorts are old walls, dry banks and stony ground.

*Annual: Flowers March to June.*—It is usually from an inch to three inches high, but occasionally when growing among grass as much as six inches. The toothed, lance-shaped leaves do not exceed an inch in length, and all spring from the root, spreading around in a little rosette. From the centre of the rosette arise the wavy flower-stems, with the minute white flowers clustered at the summit. The pod is a flat oblong, only a third of an inch long, shorter than its stalk.

There are four other British species, all very rare and local.

HOARY WHITLOW-GRASS (*Draba incana*), found high up on mountains. Is a perennial, with a long, woody rootstock and



a rosette of short oblong leaves, from which rises the stem to a height of more than a foot. Minute white flowers. June and July. Name derived from the Greek, *drabe*, acrid.

### Awlwort (*Subularia aquatica*)

Aquatic perennial which grows completely submersed in the lakes of North Wales, Cumberland, Scotland and Ireland. Flowers June and July. The few tiny white flowers are usually submersed entirely, when they appear not to open, though they fertilize themselves and produce small roundish pods with a few brown, dotted seeds. If the scape reaches to the air, the flowers expand, and cross-fertilization may take place.

The Latin name *Subularia* has reference to the awl-shape of the leaves.

### Field Penny Cress (*Thlaspi arvense*) Plate 7

This is the Mithridate Mustard of old writers, by whom it was regarded as a valuable antidote to poisons. In many districts of England it is common in cornfields and on roadside wastes, but in the northern kingdom it is not nearly so plentiful.

*Annual : Flowers May to July.*—The first leaves form a rosette upon the ground. Then up springs a slender, unbranched stem, bearing leaves whose general outline is that of an arrow-head, with waved teeth along the margins; above the leaves are many small white flowers, which are succeeded by much larger heart-shaped seed-vessels on long slender stalks which stand out, from the stem almost horizontally.

It is very similar to Shepherd's Purse, but differs in having an unbranched stem and larger flowers, with erect sepals. The seed-pods are spherical instead of heart-shaped.

There are two other British species, both rare :

**PERFOLIATE PENNY CRESS** (*T. perfoliatum*), found on limestone soils in East Gloucester. Flowers April and May.

**ALPINE PENNY CRESS** (*T. alpestre*). Found on mountain pastures only. Flowers June to August.

The generic name is Greek, from *thlaso*, flattened, in obvious reference to the pods.

### Shepherd's Purse (*Capsella bursa-pastoris*) Plate 8

One need not travel far to find a specimen of Shepherd's Purse for almost any spot of earth that man has tilled will furnish it,

though it has a preference for light soils. The entire plant is hairy. In stature the plant varies greatly, according to the position in which it grows—on a gravel path being only two to three inches high, whilst in a garden border it may be almost as many feet. An alternative name is Pickpocket.

*Annual: Flowers throughout summer.*—Radical leaves, pinnately cut, but those high on the stem are arrow-shaped with toothed edges. Flowers, very minute, white, without honey or scent, and are succeeded by the heart-shaped seed-vessel (capsule) which gives its name to the whole plant, from its resemblance to an ancient form of rustic pouch. This splits into two valves, and the numerous seeds drop out.

The name is Latin, a diminutive form of *Capsula*, a little box.

### Pepperwort (*Lepidium campestre*)

In the waste corners of fields on dry soils and along many roadsides, we may find the Field Pepperwort fairly common in England, though it is rare in both Scotland and Ireland. In general appearance it may be confused with Penny-cress or Shepherd's-purse.

*Biennial: Flowers May to August.*—The spoon-shaped radical leaves, whose edges may or may not be cut into lobes, form a rosette, from whose centre the stem rises erectly for about six inches, then divides into a number of branches, bringing the height of the plant to a foot or more. The stem-leaves are downy, stalkless arrow-heads whose diverging barbs clasp the stem. The white, cruciferous flowers with yellow stamens are only a tenth of an inch across, but they form close clusters at the tip of each branch. The seed pods are flattened ovals, a quarter of an inch long.

SMITH'S PEPPERWORT (*Lepidium heterophyllum*) is a similar plant. It is, however, more hairy, and being a perennial produces several stems, which are branched from the base. The flowers have violet anthers, and the pod is never hairy; seeds much smaller. It occurs about fields and hedgebanks.

DITTANDER (*Lepidium latifolium*) is a large, rare perennial, found in salt-marshes. The leafy stem grows erectly to a height of three or four feet. Minute white flowers in clusters, July and August.

Name is from the Greek, *Lepidium*, and refers to the scaly appearance of the pods.



**Woad** (*Isatis tinctoria*)

Plate 8

A tall, erect herb from which the early Britons obtained the blue juice to stain their bodies. Cultivated in Lincolnshire. It is regarded as being a long-naturalized waif of former cultivation, but at Tewkesbury, on cliffs by the Severn, it is believed to be truly wild. Between Gomshall and Guildford, in Surrey, it has long been naturalized.

*Biennial: Flowers July and August.*—Stem, smooth, stout, branching towards the top and attaining a height of two or three feet. Radical leaves, more or less lance-shaped, with long stalks, whilst its stalkless stem-leaves are shaped more like arrow-heads than lance-heads. The small yellow flowers are less than a quarter of an inch across, and are crowded into erect panicles. The sepals are equal at the base, and the petals equal. The thick-winged, oblong seed-pods are all pendulous, about half an inch long, brown when ripe. The name used by the ancient Greeks for these plants.

**Sea Rocket** (*Cakile maritima*)

Plate 8

This rather straggling, bushy herb is to be found on all our coasts where the shore is sandy.

*Annual: Flowers June and July.*—The stem divides early into long, fleshy, zigzag branches that may be two feet long and are only half-erect. The narrow-oblong leaves, which also are fleshy, have their margins cut into a few blunt lobes. Both branches and leaves have a glaucous "bloom." The lilac flowers are in small clusters at the ends of the branches: they are about half an inch across. They are succeeded by four-angled pods an inch long.

*Cakile*, an old Arabic name for this plant.

**Sea Kale** (*Crambe maritima*)

Plate 8

Though found on the sandy shores of the three kingdoms, the Sea-Kale is a rare plant. Occasionally it may be found away from the sand or shingle, as at Beachy Head, Sussex, where in very recent years it has climbed the great chalk cliffs.

*Perennial: Flowers May to August.*—It has a long, fleshy, burrowing rootstock, an inch thick, from which arise spreading stems a foot or two feet long, with splendid oblong heart-shaped

leaves of a glaucous tint, fleshy, and with the margins lobed and thrown into many folds. The radical leaves lie along the ground to a length of a couple of feet. On the stout flowering stems the leaves are much shorter, but much lobed and crisped. The flowers are borne in great, many-branched clusters a foot across: the individual flower being half an inch, and white with yellow stamens and a purple pistil.

*Crambe* is the old Greek name.

### The Mignonette Family (*Rosedaceae*) Plate 9

CHARACTERS.—Annual or biennial herbs. Leaves, alternate. Stipules, when present, small and glandular. Flowers, borne in racemes, irregular, small, greenish-yellow or white. Calyx, cut into four to eight lobes. Petals, four to eight, small, inconspicuous, and often much cut into lobes. The petals spring from beneath the ovary. There is a one-sided disk, with honey glands, to which the numerous stamens are attached. Carpels, two to six, united, open at the top between the lobes of the stigmas. Fruit, a one-celled tough capsule open at the top, and containing many seeds.

### Wild Mignonette (*Roseda lutea*) Plate 9

This is very similar to the Sweet Mignonnette of our gardens, but stiffer, more erect, and scentless, though honeyed. It grows in dry waste places, especially in chalky districts.

*Annual or Biennial: Flowers June to September.*—Its leaves vary a great deal, but are either pinnate or deeply lobed in a somewhat irregular manner. Flowers, pale-yellow in a tolerably dense raceme.

WELD (*R. luteola*) is a much taller plant than *R. lutea*, with longer racemes and denser; the flowers more green than yellow, and with undivided glossy leaves. Petals, three, four, or five. It yields a beautiful yellow dye, and its juice is also used in the preparation of the artist's colour called Dutch pink. It is a common wayside plant in England and in Ireland, more rare in Scotland. Flowers June to September.

UPRIGHT MIGNONETTE (*R. suffruticulosa*). Of similar dimensions to *R. lutea*, but with longer racemes of dirty-white flowers, may be found in a few places—such as Weston-super-Mare, Marazion, and Bootle.

From the Latin *Resedo*, to appease, from these plants being formerly considered as sedatives.



## The Rock-rose Family (*Cistaceae*) Plate 9

**CHARACTERS.**—Herbs or shrubs. Leaves, undivided, mostly opposite. Stipules, small leaf-like. Sepals, five overlapping of which the outer two are small (sometimes absent altogether), twisted in the bud. Petals, five, crumpled and twisted in the bud, but in the contrary direction to the sepals. Stamens, in most cases, numerous, moving apart when touched. The ovary is one-celled, sometimes divided by partitions from its walls. Style simple with an enlarged head or divided into three stigma lobes. Fruit, a capsule, opening by three, five, or ten valves. Some species are dimorphic, certain of the flowers being without petals and having few stamens.

### **Rock-rose** (*Helianthemum chamaecistus*) **Plate 9**

The pale yellow flowers of the Rock-rose are abundant on our chalk-downs, and on banks in gravelly soils throughout the country except Cornwall and West Scotland. It is shrubby, with a creeping rootstock; its branches trail on the ground among grass and low herbage.

*Perennial: Flowers June to September.*—Leaves, small, oblong, with an even margin; the upper surface hairy, the lower downy. They are arranged in pairs on the stem, and provided with long, slender stipules. The flower-bud is protected by only three sepals, but there are two others reduced to the size and shape of stipules; and so their number really corresponds with the five somewhat flabby petals. The open flowers vary from three-quarter to one and a quarter inch across. The stamens that surround the pistil are a multitude; they are also irritable, and on being touched fall back from the pistil.

The name is Greek and signifies sunflower.

**DWARF ROCK-ROSE** (*H. canum*).—With yellow flowers, scarcely exceeding half an inch across. Flowers May to July, and is found from Glamorgan to Westmorland.

The two other British species are very rare and local.

## The Violet Family (*Violaceae*) Plate 9

**CHARACTERS.**—Herbs or shrubs (British species all low herbs). Leaves, radical or alternate. Flowers, mostly solitary, irregular. Sepals five, overlapping in bud. Petals five, overlapping or twisted in the bud, the lower and largest spurred or enlarged at its base. The five stamens have short broad filaments, and are often united above the anthers, the two lower ones often with spurs which are honey-secreting glands. The ovary is one-celled, the style swelling above and ending in an enlarged or cup-shaped stigma. Fruit, a capsule, with three

elastic valves. The flower-stalk curves so as to bring the lowest petal into the uppermost position.

## Sweet Violet (*Viola odorata*)

Plate 9

This most valued flower of spring is found truly wild only in the south and east of England, and possibly the east of Ireland; but it is naturalized in many other parts of the kingdom. Its sweet perfume is sufficient alone to separate it from the related species comprised in the genus *Viola*.

*Perennial: Flowers March to May on sheltered banks.* Rootstock short, giving off runners. Leaves, broadly heart-shaped and have a way of enlarging greatly after the plant has flowered. Flowers, blue, reddish-purple, or white. Petals, unequal in size and shape, there being two pairs and an odd one. This is larger than the others, and is produced backwards as a short, hollow spur.

Bees visit the flowers in spring and cause cross-pollination, but when the spring season is over the violet ceases to furnish flowers got up for show, and sets about producing buds which will never open (*cleistogamic*). These are without petals, and contain nothing but the essential organs; the anthers produce only enough pollen to fertilize the ovules in the ovary, which then develop into perfect seeds.

The name is from the Latin.

**MARSH VIOLET** (*V. palustris*), grows among *Sphagnum* in bogs. Flowers, lilac, or white purple-veined, scentless, and with short, blunt spur. April to July.

**HAIRY VIOLET** (*V. hirta*), similar to *V. odorata*, but more compact and hairy. Flowers, purple, blue, or white. Odour slight or wholly wanting. A local species occurring in dry soils, and abundant on chalk-downs from April to June.

**DOG VIOLET** (*V. canina*). Rootstock produced into a distinct stem, bearing flowers. Sepals, narrow, pointed. Leaves *not* enlarging after flowering, as do those of *V. odorata*, *palustris* and *hirta*. Flowers from April to August, on banks everywhere.

**WOOD VIOLET** (*V. sylvestris*). Plant smooth. Central rootstock short, with a rosette of leaves, from which branches are given off all round. From these branches only are flowers produced. Spur short and broad. Leaves broad. Found in copses and woods. Flowers March to July.

**SAND VIOLET** (*V. rupestris*), a very rare, compact, hairy plant, recorded from Upper Teesdale and Westmorland only. Flowers May and June.





1



2



3



4



**Wild Pansy or Heartsease** (*Viola tricolor*) Plate 9

The Pansy differs from all the other species of *Viola* in the fact that the two upper petals are very erect instead of leaning forward, and in the stipules being developed into large leaf-like organs. In addition, this species produces none of the *cleistogamic* flowers. The leaves, too, assume forms very different from those of the typical species. The flowers vary from white, through yellow to purple, or there may be a mixture of two or more of these tints. They grow in pastures and the waste corners of various fields, flowering from May to September, and are generally distributed. A sub-species of this (*V. lutea*) has larger flowers, and underground runners. It occurs only in the fields on mountain-sides.

**The Milkwort Family** (*Polygalaceae*) Plate 10

**CHARACTERS.**—Perennial herbs. Leaves, alternate, undivided. Flowers, irregular. Sepals, five, of which the inner two are large and petal-like. Petals, three to five (usually three) connected below, of which the lower is keel-shaped. Stamens, eight, connected together and with the petals; the anthers opening by pores. Ovary, two-celled, with a simple, curved style, and spoon-shaped stigma. Fruit, a compressed capsule which splits along the margins to discharge the solitary seed.

The name is derived from two Greek words, *polus* and *gala*, meaning much milk.

**Milkwort** (*Polygala vulgaris*) Plate 10

The Milkwort is only a few inches in height, and nestling closely among the grass of heaths and dry pastures, is scarcely noticeable when not in flower, though commonly and profusely distributed.

*Perennial. Flowers all the summer.*—The tough, lance-shaped leaves are scattered alternately on the stem. The broad inner two of the five sepals are coloured purple, and the corolla may be the same hue, or pink, blue, white, or lilac. The structure of the flower is very curious. The stamens cohere, and the corolla is attached to the sheath thus formed. The pistil has a protecting hood over it, obviously with reference to the visits of insects; but the flower is also self-fertile. When the fruit is set the sepals turn green.

**PROLIFEROUS MILKWORT** (*P. calcarea*), branches rooting, and giving rise to new plants, with inner sepals broader and longer, is found on dry soils in south and south-east of England.



## The Pink Family (*Caryophyllaceae*) Plates 10-13

**CHARACTERS.**—Herbs with rounded jointed stems, thickened at the functions (*nodes*), and opposite, undivided leaves, usually with their bases joined. There are four or five free sepals, or there is a tubular calyx with as many lobes or teeth. There are four or five petals, mostly inserted below the ovary, occasionally around it (*perigynous*), which overlap, or are twisted, in the bud; they have a broad blade and a narrow claw. Stamens, usually eight to ten, their anthers opening longitudinally. The ovary is one-celled, with two to five separate or connected styles, whose inner surface is the stigma. Fruit, a cylindric or globular capsule opening at the summit by three to ten valves, and containing many seeds.

### Maiden Pink (*Dianthus deltoides*) Plate 10

All the species of this genus are characterized by their habit of growing in tufts, their narrow, grass-like leaves of firm texture, their tubular calyx, and general primness. They will be found in fields and on banks where the soil is dry. The flower is not odorous, but it secretes honey, and insects know it without the aid of scent. The honey is produced by a fleshy yellow gland at the bottom of the corolla-tube, so that only long-tongued insects like butterflies and moths can reach it.

*Perennial: Flowers June to September.*—It branches from its base, the branches slender and about a foot long. The leaves vary: on the upper part of the flowering shoots they are sharply pointed, lower down the points are blunted, and on the flowerless shoots they are strap-shaped. They are also downy, almost rough, and are disposed in pairs, their bases joined. The flowers are usually solitary, less than an inch across. Calyx smooth, five-toothed, boldly ribbed, and with overlapping bracts below. The petals not touching, toothed at their edges; of a beautiful rosy colour, dotted with white. There are ten stamens and two long styles with curled stigmas.

**DEPTFORD PINK** (*D. armeria*). The stems of this plant are few in number, and taller than those of Maiden Pink, quite erect. Leaves, very slender. Flowers, half an inch across, produced in small bunches with downy bracts below them; the rosy petals have their margins toothed. Annual. Flowers on dry banks in July and August, from Forfar to Cornwall and Kent.

**PROLIFEROUS PINK** (*D. prolifer*) is also an annual, with several stems a foot or more high. Leaves, short and downy, of a narrow lance-shape, with rough edges. The purplish-red flowers (half an inch or less across) are gathered into heads, but only



one flower opens at a time. The petals have notched margins, the slender calyx is slightly ribbed, and the bracts are dry and brown. Flowers in gravelly pastures south of Perth, June to October.

**CHEDDAR PINK** (*D. glaucus*), is a rare perennial confined to the limestone rocks of the locality that gives its name. It has solitary, fragrant, rosy flowers, one inch across, with toothed petals, which appear in June and July.

Name from the Greek words, *Dios*, Jove, and *anthos*, flower.

## Bladder Campion (*Silene cucubalus*) Plate 10

The Bladder Campion, or White Bottle, belongs to a group familiarly known as Catchflies, owing to certain species being coated with short sticky hairs, to which green-fly and other small fry adhere with fatal results. It is frequent on roadside wastes and on the margins of cornfields. The flowers, which are numerous and gathered into a panicle, are all drooping.

*Perennial: Flowers June to September.*—Rootstock, stout. Stems, erect, branching, rising to two or three feet. Both stems and leaves are of a glaucous tint. The bracts are thin and dry. The sepals are united to form a greatly swollen bladder-looking calyx of grey-green colour with a darker network of nerves. The mouth of this bladder is cut into five teeth, to indicate the sepals of which it is composed. The five petals are each deeply cloven into two narrow segments, and just below this cleft there are two scarcely noticeable scales. There are ten stamens, but the number of styles varies from three to five.

There are seven other British species, among them:

**SEA CAMPION** (*S. maritima*), very similar to *S. cucubalis*, the stems spreading instead of erect, the flowers larger, one to four only in a panicle. Flowers May to September on very rocky and sandy seashores.

**ENGLISH CATCHFLY** (*S. anglica*), a hairy, sticky, annual plant, with white or pink flowers borne singly in the axils of upper leaves. Flowers June to October, in sandy and gravelly fields.

**MOSS CAMPION** (*S. acaulis*), a little perennial that sends up its short smooth stems in tufts, which have a very moss-like appearance. The pink flowers (occasionally white) are about half an inch in diameter, erect, and solitary. Flowers June to August on Alpine rocks, ascending to 4,300 feet.

**NOTTINGHAM CATCHFLY** (*S. nutans*), a tall-growing perennial

(two to three feet), with downy stems, the upper part, together with calyx, sticky. Lower leaves stalked, broad, lance-shaped, stem leaves narrow and sessile. The pink or white flowers are about half an inch across, and droop from panicked cymes. The flowers are fragrant, though they produce no honey; and there are long and short-styled forms to assist in the work of cross-fertilization. Seen in the day-time the flowers all appear to be faded; but their insect friends are the moths, and so at night they expand their petals and pour forth their fragrance. It is a rare and local plant, exhibiting a preference for chalk and limestone. Flowers May to July.

NIGHT-FLOWERING CATCHFLY (*S. noctiflora*), an annual, covered with soft down, of wider distribution than the last, but more frequent in the eastern half of our island. Flowers, three-quarters of an inch across, erect. The petals, which are rosy within and yellow without, curl up during the day, and reopen at night, when the flower becomes fragrant. Flowers July and August.

Name from the Greek, *stalón*, saliva, in allusion to the stickiness of *S. anglica* and others.

## Red Campion (*Lychnis diolca*) Plate 10

The genus *lychnis* is very similar to the Catchflies (*Silene*) and closely allied to the Pinks (*Dianthus*). In a general way the structure of the flowers is similar, but there are five styles instead of the two that suffice for *Dianthus*. The Red Campion is a plant of the damp hedge-bank and copse-side, and is found throughout the British Isles. It is covered with soft hairs, and towards the extremity of the stems these become glandular, as in the Catchflies, and secrete a glutinous substance.

*Perennial: Flowers June to September.*—The stems grow to a height of three feet, forking repeatedly above. Root-leaves are egg-shaped, but those on the stem are much narrower. Calyx dark red, and the petals rosy pink. The broad portion, or *limb*, of the petal is cleft into two lobes, and where it narrows to the claw there will be found a couple of little scales that are erect. If we care to pull a few of these flowers to pieces we shall find that they do not all agree: in some we find stamens, but the pistil, with its five stigmas, is absent or in an undeveloped state, in others the reverse is the case, the pistil being complete whilst the stamens are wanting. The flowers are—in botanical language—*dioecious*; and this arrangement necessitates the kindly agency









of insects in the transfer of pollen from staminate flowers to those with pistils. The result of such cross-fertilization is the development of the ovary into an egg-shaped capsule, which splits at its smaller end into five teeth, which curve outward to set free the ripened seeds.

WHITE CAMPION (*L. alba*) agrees in a general way with Red Campion, but has pure white blossoms, very conspicuous at night, in order to attract the moths by which it is cross-fertilized. From the Greek, *Luchnos*, a lamp or torch.

### Ragged Robin (*Lychnis flos-cuculi*) Plate 11

Like the Celandines, Ragged Robin was known to our fathers as a Cuckoo-flower; in fact, in many parts of the country its name is still "Cuckoo-flower," but as that title is also given to the Ladies'-smock confusion is caused by its use. The habit of the plant will suggest the Stitchwort, to which it is not very distantly related, though a much nearer relation is the Red Campion. It delights in moist places, wet meadows, ditch banks, or bogs.

*Perennial: Flowers May to August.*—Stem, about two feet, reddish, the upper part rough and sticky. The lance-shaped leaves that spring directly from the slender rootstock are stalked; the more slender ones on the reddish stem are not. Calyx, dark red, with purple veins. Petals, rosy, cut into four toothed narrow segments, of which the two inner ones are very long, so that the extreme diameter of the flower is about one and a quarter inches. The flowers produce honey, and the stamens come to maturity before the stigmas, thus favouring cross-fertilization. Rarely the flowers are white.

### Corn Cockle (*Lychnis glithago*) Plate 11

Very plentiful in cornfields in late summer. The purple flowers produce honey, but owing to the length of the tube it is only accessible to the long tongues of butterflies and moths, who are instrumental in effecting its cross-fertilization.

*Annual: Flowers June to September.*—Stem, erect, clothed with white hairs, and attaining a height of four or five feet. Leaves, long and narrow, four or five inches long, and not unlike the leaves of the corn-plants surrounding them. The flowers are solitary, of a rich purple within, much paler without, and measure nearly two inches across. The woolly calyx is in one,

strongly ribbed, with five very long leaf-like teeth, that considerably exceed the petals in length.

This is the only native species, and by some botanists it is separated from *Lychnis* as *Githago segetum*.

### Common Pearlwort (*Sagina procumbens*)

The Pearlworts are among the smallest of our flowering plants. It is common throughout the country, and is found in all manner of waste places, pastures and banks.

*Perennial: Flowers May to September.*—Forms a low tuft or mat by means of a number of trailing and rooting branches that spread from the base of the primary, flowerless stem. The awl-shaped leaves are in pairs united at their base and ending in a fine hair-like point; they are about a fourth of an inch long. The numerous small greenish flowers are borne singly on separate delicate stalks, and the parts are usually in fours, occasionally increased to fives; four sepals, four much smaller white petals (sometimes wanting), four stamens and four curved styles. From the Latin, and indicates fattening food.

ANNUAL PEARLWORT (*S. apetala*), SEA PEARLWORT (*S. maritima*) and HEATH PEARLWORT (*S. subulata*) (Plate 11) differ but slightly from Common Pearlwort.

KNOTTED SPURREY or PEARLWORT (*S. nodosa*), a perennial which grows upon wet heaths and in moist, sandy places. Flowers in July and August. The primary stem remains short and does not flower, but from its base are produced a number of long branches, from four to ten inches long, which, at first leaning on the ground and rooting from their joints, curve upwards and grow almost erectly. The erect flower-stalks are often two or three together at the summit of the upright branches, giving greater prominence to the flowers. These are a quarter of an inch across, their parts in fives and the white petals longer than the sepals; there are ten stamens.

### Sea Sandwort (*Arenaria peploides*) Plate 11

By some authorities this plant is classified as *Honkenia peploides* (commemorating a German botanist, G. A. Honckeny), and in many books it is entitled the Sea Purslane, a name that belongs of right to *Obione portulacoides*, a plant related to the Goosefoots and Oraches. It is a common perennial all around our islands, wherever the shore is sandy or pebbly, often forming



extensive carpets which the dark, shining green colour of the fleshy leaves and stems renders conspicuous.

*Perennial: Flowers May to September.*—There is a creeping rootstock, from which arise forking stems that lie on the ground, whilst their branches arise to a height of only six or eight inches. Leaves, oval, stalkless, arranged in pairs. Flowers, small greenish-white, which expand only in the morning sunshine, about a quarter of an inch across. Sepals, five oval. Petals, five. Stamens, ten, alternately long and short, and the pistil has three or five styles. The large round seed-vessels are more striking than the flowers. They contain only a few large, black, pear-shaped seeds.

## Mouse-ear Chickweed (*Cerastium vulgatum*) Plate 12

The tyro in botany sees at a glance that this is a member of the Pink family; the straight joints of the spreading stems, thickened where they connect, are sufficient to tell him this. The leaf has much the shape of the mouse's ear at its upper part, and it is clothed with long silky jointed hairs. It is found in all kinds of waste places everywhere.

*Perennial: Flowers all through the season.*—The stalkless leaves are given off in pairs at the stem joints. The white flowers are gathered all together at the summit of the stem in clusters. Under each pair of flowers there is a pair of leaf-like bracts, and the lowest of these are entirely green and opaque; but all the others have a margin of thin, colourless membrane, and the five hairy sepals share this peculiar character. Within, there is a central disc, upon which five glands secrete honey for the temptation of fertilizing insects; and it also supports the stamens, and the curved cylindrical ovary, surmounted in turn by five branched stigmas. The capsule opens at the top by splitting into ten teeth and allowing the dark seeds to escape.

Among other British species are:

**FOUR-STAMENED MOUSE-EAR C.** (*C. tetrandrum*), annual, more frequent on sandy wastes near the sea. Its stems vary from four inches to a foot, frequently forked. Flowers, quarter of an inch, with four sticky sepals, and notched petals.

**LITTLE MOUSE-EAR C.** (*C. semidecandrum*), annual, a familiar weed in early spring on old walls, and in other dry situations. Stem branched from the base, hairy and sticky (sometimes nearly smooth). Flowers March and April.

**BROAD-LEAVED MOUSE-EAR C.** (*C. glomeratum*), similar to last,

but larger. Flowers often imperfectly open. Dry places, flowering April to September.

FIELD MOUSE-EAR C. (*C. arvense*), perennial. Branches in tufts. Leaves crowded at base. Flowers large, pure white; petals as long again as sepals; capsule slightly longer than sepals. Dry, sandy places; less common in Scotland. Flowers April to August.

Name, Greek, from *keras*, a horn, in allusion to the curved capsules.

### Greater Stitchwort (*Stellaria holostea*) Plate 12

One of the prettiest and most characteristic sights of spring is the mass of brittle, grass-like stems and leaves of the Greater Stitchwort, crowned by the numerous flowers of gleaming white clear-cut stars. It starts life as an erect-growing plant, but is soon fain to lean against the other constituents of the hedge-row as its stems elongate but grow no stouter.

*Perennial: Flowers April to June.*—Stems, four-angled. Leaves, long, narrow, rigid, sharp-pointed, arranged in pairs, which are more or less connected at their bases. Flowers, large, white, produced in a panicle of a few flowers only. Sepals, five. Petals, five, as long again as the sepals and cleft almost to the middle. There are ten stamens and three styles. Fruit, a globose capsule containing many seeds.

The genus *Stellaria* contains six other native species:

The LESSER STITCHWORT (*S. graminea*), similar, but a much more slender perennial plant, with exceedingly narrow leaves, smaller flowers arranged in a much-branched panicle, and with red anthers. The sepals are as long as the narrow petals. Flowers May to July.

WATER STITCHWORT (*S. aquatica*) may be found scrambling over bushes at the side of streams. It has long (three feet), angular and brittle stems, which on arising from the perennial rootstock, spread before climbing. The leaves are egg-shaped with heart-shaped base. The white flowers are produced in the axils of the leaves. There are usually five styles, rarely three. Perennial. Flowers July and August, found from Yorkshire southward.

WOOD STITCHWORT (*S. nemorum*), a plant of the copse and grove, found from South Wales and Hereford to Dumbarton and Moray. Perennial. Flowers May to August. Shining stems and egg-shaped leaves with fringed margins. White flowers, three-quarters of an inch across.





Pl. 13. 1. Corn Spurrey (*Spergula arvensis*), p. 102. 2. Tamarisk (*Tamarix gallica*), p. 102.  
3. Perforated St. John's Wort (*Hypericum perforatum*), p. 103. 4. Common Flax (*Linum catharticum*), p. 104.



The COMMON CHICKWEED (*S. media*). Annual. Flowers throughout the year everywhere. The stem trails along the ground, marked with a line of fine hairs up one side. The flowers are inconspicuous, on account of the sepals being longer than the petals, which are often absent altogether.

The MARSH STITCHWORT (*S. palustris*). Smooth, with a fine bloom (glaucous). Sepals united at base, not so long as the petals. Flowers solitary on long stalks. Flowers May to July in marshes and wet places.

BOG STITCHWORT (*S. uliginosa*). A perennial plant of bogs and marshes, with smooth, four-angled stems and oblong leaves of a glaucous hue, with thickened, pointed tips. The white flowers are only quarter of an inch across, and the sepals are longer than the petals. Flowers May to July.

The name of the genus is from the Latin, *Stella*, a star, in reference to the star-like character of the blossoms.

## Red Sandwort Spurrey (*Spergularia rubra*) Plate 12

Common and widely distributed in this country. Sandwort Spurrey is exceedingly pretty and neat. Its various forms occur in gravelly soils, about salt marshes and among seaside rocks.

*Annual or biennial: Flowers June to September.*—From the rootstock a great number of slender, ruddy jointed stems start off, but remain almost prostrate. At the joints the leaves grow in little bunches, surrounded by semi-transparent silver stipules. The upper portions of the stems, also the sepals, are covered with short, glandular hairs. Sepals, five, of a ruddy-green colour. Petals, five, of a bright rosy tint, the under-surface paler. Stamens, ten, the anthers bright yellow. Stigmas, three.

## Salt-Marsh Sand-Spurrey

(*Spergularia marginata*)

Plate 12

This is usually regarded as a sub-species of *rubra* with a maritime habit. It is found in muddy salt-marshes.

*Perennial: Flowers June to September.*—Stems flattened from the sides. Leaves fleshy, half-round in section, but have blunt tips. Stipules broadly triangular. Petals equal in length to or slightly less than the sepals: pale lilac or nearly white. Stamens, ten. The capsule is one and a half to twice the length of the sepals, and the reddish seeds have a broad wing.

ROCK SAND-SPURREY (*S. rupicola*), found in rocky and shingly



places near the sea, and SHORE SAND-SPURREY (*S. salina*), found in rocky and muddy places near the sea, are also maritime subspecies.

### Corn Spurrey (*Spergula arvensis*) Plate 13

The Spurrey is one of that extensive tribe of weeds of many orders that hang, so to speak, upon the heels of the farmer, and follow wherever he goes. This one will be most readily found in the cornfield on dry soils, about June. Stems, straggling, downy, branching from the root, from one to two feet in length, with bent joints, or knees.

*Annual: Flowers June to August.*—Leaves, half round, awl-shaped, very slender, in distant pairs, but from their association with newer leaves springing from their axils, they appear to be arranged in whorls. Flowers, minute, gathered into cymes at the ends of the stems, small and inconspicuous. Sepals, five, oval, almost as large as the five white petals. Stamens, ten, with roundish anthers. Ovary, egg-shaped, with five curved styles.

The name of the genus is from the Latin, *spargo*, to scatter or sow.

### The Tamarisk Family (*Tamaricaceae*) Plate 13

**CHARACTERS.**—Shrubs or small trees, which have no native representative, though one species is extensively planted as a hedge and shelter bush along the South and East coasts. The overlapping leaves are so small and scale-like that the slender shoots appear leafless. The flowers are in spikes and consist of four or five separate sepals, and an equal number of petals, both kinds overlapping in the bud. Stamens, from four to ten, inserted on the glandular disk. Anthers *versatile*. Ovary, one or more celled, with three or four styles. Fruit, a capsule opening by two to five valves.

### Tamarisk (*Tamarix gallica*) Plate 13

Visitors to seaside places on the south, east and west of England will constantly meet with a small tree or bush, ten or twelve feet high, with pliant feathery branches and minute evergreen leaves. This is the Tamarisk, a tree that is not a native, but which has been grown in Southern England for so long that it has come to be considered as an indigene. Its great recommendation is the power to withstand cutting salt winds, that destroy the foliage and branches of many perfectly hardy shrubs.

*Perennial: Flowers July to November.*—Leaves, minute evergreen. Flowers, minute, white or pale rose, about one-eighth of



an inch in diameter, but clustered in a blunt spike one and a half inches long. They consist of four or five lance-shaped sepals, a similar number of petals, and a tapering ovary, with three or four short, thick styles. The fruit is triangular in section.

The name is said to be derived from Tamaris, a Spanish river on whose shores the tree is plentiful.

## St. John's Wort Family (*Hypericaceae*) Plate 13

CHARACTERS.—Herbs, shrubs, or small trees. Leaves opposite, frequently studded with pellucid glands. Flowers, usually in terminal cymes. Sepals, five (rarely four), overlapping in the bud; the same number of petals, inserted beneath the ovary, and (usually) twisted in the bud. Stamens, numerous, gathered into bundles, and with versatile anthers. The ovary consists of three to five carpels, and may be as many-celled, or one-celled. The thread-like styles agree in number with the carpels, and have stigmatic tips. Fruit, occasionally a berry, mostly a capsule which splits through the centre of each partition (*septicidal*).

### Perforated St. John's Wort

(*Hypericum perforatum*)

Plate 13

There are no less than eleven native species of St. John's Wort, all characterized by a neat habit, clean-cut leaves without stalks, yellow flowers in cymose clusters, and a multitude of stamens, which are more or less joined in several bundles. *Perforatum* is one of the commonest, and occurs in copses and hedge-banks throughout the kingdom, as far north as Sunderland. It is very erect in habit. Stems, two-edged, pale brown and smooth, two or three feet high.

*Perennial: Flowers July to September.*—Leaves, veins (*but not the reticulations*) are pellucid, the leaf thickly dotted with pellucid glands. Flowers, one to one and a quarter inches in diameter. The calyx, corolla and sometimes leaves are more or less marked with black dots and lines. Sepals and petals, five. Ovary, large, pear-shaped, surmounted by three long styles, which are longer than the ovary. Stamens, joined in three bundles by their bases only.

Among the other British species are:

**SQUARE-STALKED ST. JOHN'S WORT** (*H. tetrapterum*). Leaves broader than in *perforatum*, but the glands, veins and *reticulations* are pellucid. Flowers dense, one-half to three-quarters of an inch across. Flowers July and August in moist places.

**TRAILING ST. JOHN'S WORT** (*H. humifusum*), stems slender,

compressed, prostrate, not exceeding one foot. Leaves small, oblong; glands pellucid. Flowers, half an inch across. Flowers July and August on commons and wastes.

**SMALL UPRIGHT ST. JOHN'S WORT** (*H. pulchrum*). Stems slender, round, smooth, erect. Leaves heart-shaped, with pellucid glands. Sepals small, oblong. Petals yellow, tinged with red, and edged with black glands. Flowers three-quarters of an inch, in loose panicles. Flowers June and July. Dry woods and heaths.

**HAIRY ST. JOHN'S WORT** (*H. hirsutum*). Stem erect, round, downy. Leaves large, with short stalks, downy beneath, pellucid glands. Sepals very narrow, half length of petals, with black glandular teeth. Flowers July and August in woods and thickets, especially on chalk.

**TUTSAN** (*H. androsaemum*). Stem shrubby, compressed, two feet high. Flowers few, three-quarters of an inch across. Sepals unequal (three large, two small), glandular, except margin. Petals and stamens not permanent. Stamens in five bundles. Flowers July to September in hedges and thickets.

### The Flax Family (*Linaceae*) Plate 13

**CHARACTERS.**—Herbs, shrubs, or trees (British species all herbs). Leaves undivided, alternate, or (rarely) opposite, sometimes with stipules. Flowers in a cyme. Sepals four or five, separate or connected, overlapping in the bud. Petals four or five, inserted beneath the ovary, overlapping or twisted in the bud. Stamens four or five, alternating with an equal number of teeth (aborted stamens), or ten perfect ones, inserted in a ring below the ovary; anthers versatile. Ovary three- to five-celled, with a corresponding number of styles having the tips stigmatic. Fruit, a capsule, which splits septicidally into separate carpels, which open by valves.

### **Common Flax** (*Linum usitatissimum*) Plate 13

Occasionally the rambler will find this Flax in cornfields and wastes, by oil-mills and in the neighbourhood of railway stations. Wherever it may be found it is an escape from cultivation. As a truly wild plant the "most used" flax is not known; in cultivation, as the parent of linen garments, it has been known from the infancy of the human race.

*Annual: Flowers June and July.*—Stems, erect, slender, about one and a half feet high. Leaves, narrow, lance-shaped, alternate. Flowers, large, purplish-blue in colour. Five is the



number dominating the structure of the flower : sepals, petals, stamens, glands, ovary (five cells), styles—all in fives.

There are three species that are truly wild in Britain :

**PURGING FLAX** (*L. catharticum*). A smaller species, half a foot high, with *white* flowers, affecting heaths and pastures. Flowers June to September.

**PERENNIAL FLAX** (*L. perenne*). A very rare plant with exceedingly narrow leaves, alternate on the numerous wiry stems, about two feet high. Large bright-blue flowers. Flowers June to September on chalky soils from Durham to Essex.

**NARROW-LEAVED FLAX** (*L. angustifolium*). Leaves alternate, as narrow as in the last species, but smaller and not so plentiful. Flowers smaller and paler, petals smaller in proportion to the calyx. Flowers May to September on sandy and chalky pastures, not farther north than Lancashire.

*Linum* is the ancient Latin name for the plant and its products.

## The Mallow Family (*Malvaceae*) Plate 14

**CHARACTERS.**—Herbs and shrubs in this country ; in some parts of the world trees also. Leaves alternate, with temporary stipules. Calyx, five-lobed, often with little bracts attached to the sepals, and forming an *epicalyx*. Petals, five, twisted in the bud. Stamens, very numerous, their filaments combined into a tube surrounding the ovary, to which the petals are attached by their base. Anthers one-celled, opening to discharge their pollen away from the stigmas. Carpels numerous, forming a ring. Fruits forming a ring.

### **Tree Mallow** (*Lavatera arborea*) Plate 14

Along the south and west coasts of England, on the Bass Rock in the Firth of Forth, and rarely on the Irish coast, the rambler may have the good fortune to come across this remarkable plant growing from crevices in the rocks. But it is much more rare as a wild plant than it was formerly. Its large rosy-purple flowers are much like those of the Common Mallow.

*Perennial : Flowers July to September.*—Stems, erect, branching, woody, from three to six feet high. The large, long-stalked, velvety leaves are roundish in general outline, but cut into five or seven lobes which have rounded teeth ; they are also plaited, the folds running from the stalk along the middle of each lobe and a reversed fold to the indent between the lobes. From the axils of the leaves are produced annual flowering shoots. The

flowers are an inch and a half across. The glossy petals are rosy-purple, veined with a darker purple. The fruits are arranged in like manner to those of the Marsh Mallow.

The genus was named in honour of the brothers Lavater, Swiss physicians.

### Common Mallow (*Malva sylvestris*) Plate 14

In some places the Common Mallow is known by the undignified name of Rags-and-Tatters. When it is allowed to grow unmolested in a waste corner of the field, or by the copse-side, it is a thing of considerable beauty.

*Biennial or perennial: Flowers June to September.*—Stem, somewhat hairy, erect, growing to a height of three or four feet. Leaves, kidney-shaped, the margin broken up into five lobes which have toothed edges. The flowers, which are produced from the axils of the leaves, are large (one and a half inch), and of a pale purple (mauve) tint, with darker lines converging to the centre. The five petals are heart-shaped. It will be observed that in newly-opened flowers the anthers are ripe and shedding their pollen, whilst the ten styles are not yet mature. When, later, the stigmatic upper surfaces of these become fit for pollination, they hold themselves strictly above the drooping stamens, so that self-fertilization is impossible.

ROUND-LEAVED, or DWARF MALLOW (*M. rotundifolia*), found on roadsides and rubbish-heaps. Perennial. Flowers June to September. The downy stems lie along the ground, and bear many small, roundish, lobed or toothed leaves. The flowers, too, are small (three-quarters to one inch), of similar tint to those of its larger relative; but as they are not sufficiently conspicuous to attract many insects in their lowly situation, they adopt different methods. Anthers and stigmas mature simultaneously, and the styles, instead of keeping aloof from the anthers, curl and twist among them, and so ensure self-pollination.

MUSK MALLOW (*M. moschatus*) grows in dry meadows, hedge-rows and copse-sides. Perennial. Flowers July and August. Stems erect, about three feet in height, well clothed with leaves, which are cut up into a number of narrow segments. When these leaves are passed through the hands they yield a slight musky odour. The flowers are almost as large as those of the Common Mallow, but of a beautiful rosy tint, borne in clusters at the summits of the numerous stems.

Fruits of all three species consist of a number of one-seeded carpels arranged in a ring. From the Greek, *malaché*, soft.



**Marsh Mallow** (*Althaea officinalis*) Plate 14

Marsh Mallow is of only local occurrence, in marshes near the sea, chiefly in England and Ireland, and in Scotland south of the Clyde. It has demulcent properties and is soothing to irritated mucous membranes.

*Perennial: Flowers August and September.*—Stem and leaves have a velvety coat, whose softness distinguishes it from the rougher hairiness of the Malvas. Stem, simple or slightly branched, from two to three feet high. Leaves, large, thick, oval, heart-shaped or roundish, divided usually into three or five lobes, which have coarsely toothed edges. Flowers, pale rose tint, produced in small clusters from axils of stem-leaves. Fruit, as Common Mallow.

**HISPID MARSH MALLOW** (*A. hirsuta*), found only in Somerset and North-west Kent. Annual. Flowers July and August. Stems, leaves and calyx are covered with bristly hairs. Flowers, rose-purple, solitary, about one inch across.

From the Greek, *Altheo*, healing.

**The Crane's-bill Family** (*Geraniaceae*) Plates 14-15

**CHARACTERS.**—Herbs, occasionally shrubby. Leaves, opposite or alternate, usually with stipules. Flowers regular, with five sepals, five petals overlapping in the bud, and ten stamens (in Stork's-bill five are aborted.) Ovary, five-lobed and five-celled, ending in five styles which are united to form a tapering beak—the Crane's-bill, on which the family names are founded. The fruit splits septicidally to separate the five carpels (as in Crane's-bill), or down the middle of the back of each carpel (loculicidally) to free the seed, as in Wood Sorrel.

**Dove's-foot Crane's-bill** (*Geranium molle*) Plate 14

This neat member of a charming family is a familiar plant of the wayside and pasture.

*Annual or biennial: Flowers May to September.* Stems, slight, and swollen at the joints. Leaf-stalks, long. Leaves, kidney-shaped, deeply cut into about seven lobes, which are in turn lobed or toothed. Owing to the close general resemblance of this species to its immediate congeners, some rather minute differences should be noted. The sepals each end in a hard point; the broader end of the narrow rosy petals is notched in the middle, and the narrow lower portion (*claw*) is fringed with hairs. The carpels, or divisions of the seed-vessel, are keeled

but not wrinkled, and the seeds are *pitted*. Its nearest allies are :

ROUND-LEAVED CRANE'S-BILL (*G. rotundifolium*), with similar leaves to the last, but with the petals *not* notched, the claw *not* bearded. Flowers pink. Found only in the southern half of Britain. Flowers June and July.

SMALL-FLOWERED CRANE'S-BILL (*G. pusillum*). Leaves more deeply lobed, sepals as long as the notched petals, claw slightly hairy. Flowers, pale rose, June to September.

LONG-STALKED CRANE'S-BILL (*G. columbinum*). Lobes of leaves distant from each other, the segments into which they are again cut being very narrow ; sepals large, tapering, and ending in a hair-like point, as long as the entire rose-purple petals. Flowers June and July.

CUT-LEAVED CRANE'S-BILL (*G. dissectum*). Similar to *G. columbinum*. Bright red petals, notched. Flowers May to August.

HERB-ROBERT (*G. robertianum*). Plant more or less red. Leaves, divided into five leaflets, these subdivided. Calyx, angular, the sepals long-awned and hairy. Petals, narrow, not notched ; purple streaked with red ; claw, smooth. Flowers May to September.

SHINING CRANE'S-BILL (*G. lucidum*). Plant more or less crimson in summer. Leaves divided into five segments, each bluntly lobed at the top. The calyx is a wrinkled pyramid, each sepal awned. The rosy petals are much longer than the sepals ; claw smooth. Flowers May to August.

BLOODY CRANE'S-BILL (*G. sanguineum*). Plant hairy ; stems two feet, bent at joints ; leaf-segments five to seven, these again deeply cut. Flowers one and a half inch diameter, crimson, singly on long stalks. Flowers July and August on rocks and sandy shores.

WOOD CRANE'S-BILL (*G. sylvaticum*). Stem erect, velvety, branched, three feet ; leaves large (four to five inches), round, cut into seven lobes. Flowers three-quarters of an inch, blue-purple or rosy, two on a stalk, June and July, in copses and meadows north of Staffordshire and Carnarvonshire.

MEADOW CRANE'S-BILL (*G. pratense*). Stem erect, downy, four feet, branched ; leaves four to six inches, round, cut into seven to nine lobes. Flowers many, one and a quarter inch diameter, blue-purple, June to September, in moist meadows.

The name is from the Greek *geranos*, a crane









**Hemlock Stork's-bill** (*Erodium cicutarium*) Plate 15

The Stork's-bill with its pretty pink flowers is a handsome plant, common on dry wastes and commons, especially near the coast.

*Biennial : Flowers June to September.*—Stems, three to twelve inches. The leaves are cut up into a large number of leaflets, arranged in slightly irregular pairs on either side of the rib, and these leaflets are cut up into many irregular lobes. It is the arrangement so common in ferns. The parts of the flower agree in number with those of *Geranium*, that is, sepals five, petals five, stamens ten (but five are imperfect, and produce no anthers), stigmas five. The fruits agree pretty closely with those of the Crane's-bills.

The MUSKY STORK'S-BILL (*E. moschatum*) is much larger than the last mentioned, with rose-purple flowers in June and July. It is easily identified by the strong smell of musk. Its range extends south from Pembroke and Worcester to Dorset and Cornwall; it occurs in the Channel Islands, and locally in Ireland.

The SEA STORK'S-BILL (*E. maritimum*), with small reddish-purple flowers, is found on sandy and gravelly coasts. Flowers May to September.

The name of the genus is from the Greek, *Erodios*, a heron, and is suggested by the shape of the fruit.

**The Wood Sorrel Family** (*Oxalidaceae*)

**CHARACTERS.**—Herbs (see Crane's-bill Family, p. 107). This family was formerly included in the *Geraniaceae*. It differs from the latter in having a five-celled ovary, of which each cell contains many seeds, while in *Geraniaceae* the ovary consists of five single-seeded carpels. *Oxalis* is the only British genus.

**Wood Sorrel** (*Oxalis acetosella*) Plate 15

Abounds in moist, shady woods, rapidly covering the leaf-mould with its fresh yellow-green trefoils backed with purple, and pink-streaked white flowers. A favourite position for it is the rotten centre of some old beech stump. But in some woods it may be found in great abundance on the ground.

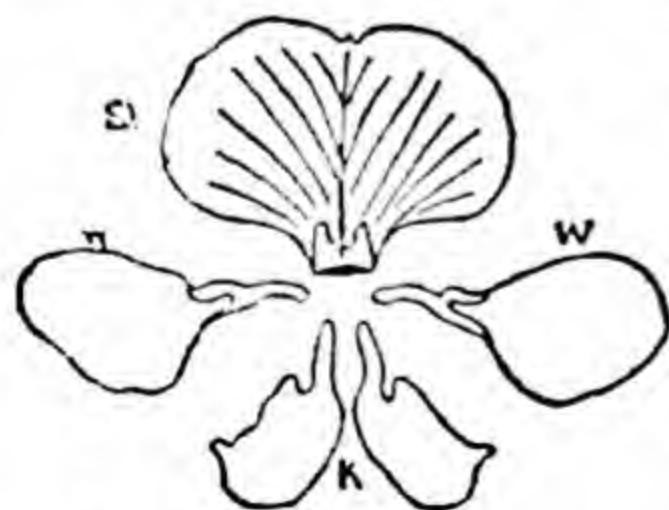
*Perennial : Flowers April and May.*—The roots are fine and scattered along the creeping knotted pink stems. The leaflets

droop close to the stalk at night or on the approach of rain. Flower, regular; sepals five, petals five, stamens ten, stigmas five. Fruit, a five-angled, irritable capsule, from which the seeds are thrown with great force to a distance of several yards. In addition to the coloured spring flowers, the Wood Sorrel produces throughout the summer a large number of buds which never open (*cleistogamic*), but which develop into seed-vessels and discharge good seeds. The leaves have a pleasant acid flavour, due to the presence of oxalic acid. The generic name is derived from the Greek *Oxys*, sharp.

## The Pea Family (*Leguminosae*) Plates 15-19

**CHARACTERS.**—Mostly herbs, a few shrubs. Leaves alternate, usually divided, and in most cases with stipules. The flowers are variously grouped in spikes, racemes, heads, or are borne singly. They are all irregular, and keep very close to one type of structure. They are also remarkably uniform in habits—the stamens always maturing before the pistils. The five united sepals often form two lips. The five petals are in two dissimilar pairs, and the odd one is enlarged so that it enwraps the others in the bud and when expanded is the most conspicuous part of the flower. Stamens, ten, with filaments united into a sheath which encircles the ovary; sometimes one stamen is distinct from the connected nine. Ovary, one-celled, ending in a curved style with simple stigma, and developing into a dry pod, or *legume*, which splits along its edges to liberate the single or double row of seeds.

There are nearly three hundred genera throughout the world, with nearly five thousand species.



Parts of a leguminous flower.

The accompanying diagram of a dissected pea-flower shows the distinctive arrangement of the petals in all genera of this family. St., the largest and uppermost petal, is known as the Standard; W, W, the lateral pair, are the wings; and K, the lower pair, combine to form the keel in which the stamens and pistil lie. Visiting insects, alighting on the wings, cause the keel to open suddenly, and the stigma and stamens are pressed against the insect's body.



**Furze, Whin, or Gorse** (*Ulex europaeus*) Plate 15

A shrub growing up to six feet widely distributed throughout the country. The enormous trusses of fragrant golden flowers beautify heaths and commons everywhere, especially in the early summer, but to some extent throughout the year.

When the furze is but a seedling it has soft hairy leaves that are trefoils; but as the plant grows older the new leaf-material is produced in the form of spines, with sometimes minute leaflets at their base to show their nature. The larger spines are really branches, as will be seen when the flowers spring from them. Note that in this genus the calyx, which is divided into two parts only, is large and thin, minutely toothed, and coloured yellow, though this colouring is subdued by the spreading black hairs that cover it. There are large bracts below the flowers. The black, hairy pod is but slightly longer than the calyx, the valves elastic, which causes them when ripe to curl up with a crackling noise, and scatter the polished olive seeds to some distance.

DWARF FURZE (*U. minor*) is a smaller species, about half the size of the above. The pods do not fly open, but persist on the bush until the season following their formation. Flowers July to November. This species carpets some of our heaths in the south, the branches growing along the ground.

The name is said to be derived from the Gaelic, *uite*, all, and *ec*, a sharp point.

**Needle Whin** (*Gentista anglica*) Plate 15

Needle Whin is in some districts Needle-furze, Needle-Greenweed, or Petty-whin. It is a prickly, shrubby plant, with bright yellow blossoms, that grows freely on heaths and moors throughout the country.

*Shrub, growing to two feet. Flowers May and June.*—The slender branches spread in all directions, covered with spines and minute lance-shaped leaves. The spines vary from half an inch to one inch in length, and occasionally may be found branched. The flowers, which spring from the axils of the bract-leaves, are about half an inch long, have short footstalks, and are of the usual Pea type of structure. The calyx is two-lipped, the upper one cut into two lobes, the lower shorter, with three short triangular teeth. The filaments of the stamens are all united to form a tube, and the anthers are alternately long and short. The seed-pod is inflated, about three-quarters of an inch long, and pointed at each end.

**DYERS' GREENWOOD, or WOADWAXEN** (*G. tinctoria*). Formerly of importance in the production of Kendal Green. Stems rigid, branched, but without spines. Leaves, rather distant, with hairy edges, and awl-shaped stipules. Flowers pale yellow, almost stalkless. Pod, one inch or more long, thin, smooth. Flowers July to September in pastures, meadows, and thickets on poor soil.

Name said to be from the Celtic, *gen*, a shrub.

### **Broom** (*Cytisus scoparius*)

Plate 16

The Broom is liable to be confounded with the Furze by the non-botanical Rambler, chiefly because of a kind of similarity in the flowers, and the partiality of both for heaths and commons. There are, however, several points of difference between them; but one is sufficient for a rough-and-ready distinction. The Furze began life with a few leaves similar to those of the Broom, but as it grew it put forth sharp spines instead of ordinary leaves, until it became more difficult to handle than any hedgehog. The Broom rarely puts on any prickles at all, and its compound leaves, of three small leaflets, may be seen, as in the plate, close to the pliant stems. The flowers, too, are larger than those of the Furze, though similar in structure.

*Shrub, growing to five feet : Flowers April to July.*—It is widely distributed throughout the country. The calyx is two-lipped, the petals five, unequal in size and shape, with the characteristic structure of the family, described above. The ovary develops into a valved pod like that of the garden pea, but smaller and black. When ripe the valves separate, twist up, and scatter the seeds.

### **Rest-Harrow** (*Ononis spinosa*)

Plate 16

The Rest-Harrow or Wrest-Harrow is one of those plants whose presence in the pasture is said to indicate its poverty. It is found in dry wastes, and in Sussex and Hampshire is known as the Cammock.

*Perennial : Flowers June to September.*—Shrub, sometimes creeping near the ground, and at others growing more erect. The rootstock often creeps underground. The pink flowers are similar in structure to those of Broom, and may be borne either singly or in racemes. The petal known as the standard is very large in this species, and streaked with a fuller red. The pod is very small, and in the hairy form is not so long as the calyx.



**SMALL REST-HARROW** (*O. repens*), a prostrate form, found in sandy pastures near the sea; is covered with viscid hairs.

## Lucerne (*Medicago sativa*)

Plate 16

This handsome plant has been largely grown here as a green fodder plant, and when it is now found growing apparently wild in the hedgerow and on the borders of the field, it has escaped from the fields. A glance at its flowers will show it is a leguminous plant.

**Perennial: Flowers May to July.**—Stems, hollow, branched. Leaves, trifoliate, with long-pointed and toothed stipules at the base of the leaf-stalk. From the axils of the leaves arise long stalks, whose free ends are crowded with the deep purple (sometimes yellow) flowers. A peculiarity of this genus consists in the seed-pod being more or less spirally twisted. In the present species it is downy and has two or three coils.

The name *Medicago* is from the old Greek *medike*, so called because it was introduced into Greece by the Medes. The following species also occur in this country:

**YELLOW SICKLE MEDICK** (*M. falcata*), with yellow (sometimes violet) flowers, and a flat downy pod coiled in the shape of a sickle or a ring. Perennial. Flowers June and July on dry gravelly banks, old walls and sandy wastes in the Eastern Counties.

**BLACK MEDICK or NONSUCH** (*M. lupulina*). So much like *Trifolium campestre*, described on page 116; that farmers have given it the name of Hop-Trefoil, which properly belongs to the latter species, from which this may be easily separated by noting that the black kidney-shaped pods are naked, that is, not wrapped in the dried flower. It should also be observed that the pods are marked by prominent veins running throughout their length. Annual. Flowers, small, crowded, yellow. May to August, on waste grounds and cultivated fields.

**RECTICULATED MEDICK** (*M. denticulata*). Stems, creeping. Leaflets, heart-shaped, toothed. Flowers, yellow, in umbels. Pod beautifully covered with network of veins; broad, flat, and coiled into a spiral; edges with double row of spines. Annual. Flowers May to August in South and Eastern Counties, and Ireland.

**SPOTTED MEDICK** (*M. arabica*).—Similar to last, but pod more globose, network faint, the spines long and curved. Annual. Flowers May to August on gravelly pastures and hedgebanks in England and South Ireland.

**Tall Melilot (*Melilotus altissima*)** Plate 16

In field corners, bushy hedgerows, and roadside wastes, the Rambler comes across an erect, slender, branching plant with few trefoil leaves and many long-stalked sprays of small Furze-like yellow flowers. This will be one of the Melilots; but of the three species found in this country two have yellow flowers; and until they have ripened their seed-pods it is difficult to say whether you have the native *M. altissima* or the alien *M. officinalis*. If the two could be examined side by side, it would be seen that the flowers of the first-named are of a deeper yellow than those of the other.

Tall Melilot is three or four feet high. Annual or biennial. Flowers June to August. Leaves, long-stalked, broken up into three slender oval leaflets with toothed edges: at the base of the stalk is a pair of bristle-like stipules. From the axils of the leaf-stalks stand out the long flowering branches, bearing many flowers, all drooping and turning in one direction. The petals are all of the same length. The flattened, hairy pod has net-like markings, and when ripe is black.

COMMON MELILOT (*M. officinalis*), found chiefly in the eastern counties, differs in the paler tint of its flowers, with the keel shorter than the other petals; stipules awl-shaped; the stouter, smooth pod brown or olive. Flowers June to August.

WHITE MELILOT (*M. alba*) is a rare alien, found on sandy wastes near the sea.

The name is a compound of *mel*, honey, and *lotus*, the name of another genus = the Lotus with the honeyed odour.

**Clovers or Trefoils (*Trifolium*)**

Everybody knows a Clover when he sees it; but we have many native species, to say nothing of the introduced kinds. All the Clovers or Trefoils are Leguminous plants, and the structure of the individual flower is characteristic; but the flowers are much smaller, and are gathered into a conspicuous head. In certain species there are floral bracts, and in some these form an involucre. It is characteristic of most of the clovers that when the seed is set the petals do not fall off, but simply dry up and wrap round the pod. The name of the genus is Latin, and signifies *three-leaved*. The principal British species are:

SUBTERRANEAN TREFOIL (*T. subterraneum*), so called from its singular habit of burying its pods in the earth when they are



ripening. The plant has many creeping stems, covered with soft hairs. The heads of flowers are cream-coloured, and are produced in the axils. The individual flowers are long and slender; only a few in each head are fertile, and in this species the petals fall off early. The pod is a compressed orb. Annual. Flowers in May and June in Southern and Central England on dry, gravelly pastures.

COMMON PURPLE OR RED CLOVER (*T. pratense*). (Plate 17.) This is the clover so commonly grown in meadows as an important ingredient in the hay-crop. Its large oval leaflets are frequently marked with a whitish band that takes more or less of a quarter-moon shape. Its flower-heads are round, afterwards becoming longer than broad, purplish red in colour. Calyx-teeth slender, bristly, not longer than corolla. Top of pod dropping off when ripe. This is the clover Darwin made famous by showing that the cultivated forms must die out but for the humble-bees, whose tongues alone are long enough to fertilize its long flowers. Perennial. Flowers May to September in meadows, pastures, and roadsides.

ZIGZAG OR MEADOW CLOVER (*T. medium*). Leaflets more pointed than in *pratense*, and spotless. Stem branched in such a manner as to give it a peculiarly zigzag appearance. Heads larger, and of a deeper purple than *pratense*. Perennial. Flowers June to September in pastures.

SOFT KNOTTED TREFOIL (*T. striatum*). Stem more or less reclining, downy or silky. Flower-heads both terminal and axillary, small, rosy-red, broader at the base. Annual. Flowers June and July on dry pastures.

ROUGH RIGID TREFOIL (*T. scabrum*). Stems, rigid, prostrate. Leaflets, rigid, toothed, the veins thickened. Flowers, small, the corolla white, calyx purple. Annual. Flowers May to July on chalky and sandy pastures near sea.

DUTCH CLOVER (*T. repens*). Stems smooth, creeping, but not rooting. Leaflets often with a dark spot at the base, below a whitish band. Heads of flowers globose, all produced from the axils, on long stalks. Flowers, white or pinkish, attached by short stalks, which are recurved after flowering, so that the pods are all drooping. Perennial. Flowers May to October in meadows and pastures.

STRAWBERRY-HEADED CLOVER (*T. fragiferum*). Similar in habit to the last. Flower-head globose, of small purple-red flowers, much larger after flowering, when the calyces swell and take on a red colour, which increases size of head to one inch



in diameter, and gives it a strawberry-like aspect. Meadows and pastures. July and August.

**HOP TREFOIL** (*T. campestre*). (Plate 17.) This must not be confounded with the Hop Trefoil of the farmer (*Medicago lupulina*), in which the flowers are borne in spikes (see page 113). The stems are downy, one growing erect, others all round it creeping. The flowers are pale yellow, crowded in the heads, the upper petal (*standard*) broad, and arched over the *straight* pod, turning bright brown, which gives the head the appearance of a hop strobile. The pods are always so covered in this species, whereas in *Medicago lupulina* they are naked. Annual. Flowers June to August on dry pastures and roadsides.

**HARES-FOOT TREFOIL** (*T. arvense*). (Plate 17.) This may be taken as a type of a small and distinct group of Clovers, with the flower-heads of cylindrical form. A downy annual, one foot high, with many stems, almost erect, and the rather distant leaves of three slender leaflets, half to three-quarters of an inch long. The leaf-stalk is provided with a pair of large stipules ending in long bristly points. The pinky-white flowers are very small and numerous, gathered in long soft heads (half to one inch) on lengthening stalks. The persistent calyx-teeth are much longer than the petals, and give a bristly appearance to the flower-heads. Flowers July to September in dry fields.

### Bird's-foot Trefoil (*Lotus corniculatus*) Plate 17

In summer our commons, pastures, downs, and railway banks are bright with the flowers of Bird's-foot Trefoil, or, as it is termed in some districts, Lady's Slipper, a name which properly belongs to the rare orchis *Cypripedium*.

*Perennial*: Flowers June to October.—Rootstock, short, woody, from which originate several trailing branches, which are themselves much branched. The leaves are not trefoils, as the name would lead us to suppose, for the apparent stipules at the base of the leaf-stalk are in this genus leaflets. The flowers, which are in spreading heads of from three to ten flowers, are of a pretty yellow, tinted with red. They are succeeded by little cylindrical pods about one inch in length, which, when three or four are in a cluster, present the appearance of a bird's claws.

The name was given to the genus because this was believed to be one of the plants to which the ancient Greeks applied the name *Lotus*.

**GREATER BIRD'S-FOOT TREFOIL** (*L. uliginosus*). More or less



Pl. 17.

1. Red Clover (*Trifolium pratense*), p. 115.  
 3. Hare's-foot Trefoil (*Trifolium arvense*), p. 116.

2. Hop Trefoil (*Trifolium campestre*), p. 115.  
 4. Bird's-foot Trefoil (*Lotus corniculatus*), p. 116.



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4



erect in habit up to two feet. Flowers, bright yellow. The calyx-teeth *spread* in bud. Perennial. Flowers July and August in moist meadows and swampy places.

### Kidney Vetch (*Anthyllis vulneraria*) Plate 18

Popularly known as Lady's-fingers. Its bluish leaves covered with silky hairs and yellow blossoms are common throughout Britain on dry pastures and rocky banks.

*Perennial : Flowers June to August.*—From a woody rootstock arise several stems and a large number of radical leaves ; these consist of a long terminal leaflet and two disproportionately small lateral leaflets. The leaves from the stems (cauline leaves) have a larger number of leaflets in pairs, as well as a terminal one. The flowers are borne in heads, with an involucre of leaflets, and the heads are chiefly in pairs. Calyx membranous, and therefore permanent, the mouth oblique, with five teeth. Petals nearly equal in length, and typically yellow, but subject to considerable variation. After flowering the straw-coloured calyx becomes inflated, and the roundish smooth and veined pod, with its solitary seed, is hidden within.

In some of the coast localities this plant will be found with flowers white, cream-coloured, crimson, and purple.

The name is the one in use among the ancient Greeks, and signifies *bearded flower*, which is obviously a reference to the woolly calyces.

### Horseshoe Vetch (*Hippocrepis comosa*) Plate 18

The flowers of the Horseshoe Vetch are probably often passed over as belonging to the Common Bird's-foot Trefoil, but the plant as a whole could not be so mis-identified. It is found on chalk hills and stony pastures, but only in England, and in Ayr and Kircardine. On the North Downs in Surrey it is very plentiful.

*Perennial : Flowers May to August.*—Woody rootstock, from which spring many branching stems. Leaves, pinnate, like those of Sain-foin, though the leaflets are not so numerous. They vary from four to eight pairs, with an odd one at the tip. The yellow flowers as mentioned have a general resemblance to those of *Lotus*, though much smaller, and are from six to ten in each umbel on a long curved stem. They are succeeded by pods that in no way resemble *Lotus*, being rough, serpentine in shape, and jointed.

The name is from two Greek words, *'ippos*, a horse, and *kreps*, a shoe, in allusion to the form of the pods.

**Sainfoin** (*Onobrychis viciifolia*)

Plate 18

This handsome herb is much cultivated as a fodder plant in dry fields, but will also be found growing wild on chalk-hills and downs.

*Perennial: Flowers June to August.*—Rootstock, woody. Stems, stout downy, are more or less erect up to two feet high. Leaves, pinnate, the leaflets in about twelve pairs and a terminal one. Flowers, spikes, the standard broad, the colour bright clear pink, veined with a deeper rosy tint. Pod semicircular, wrinkled, and containing but one seed.

Sain-foin is from the French and means literally *wholesome-hay*.

**Tufted Vetch** (*Vicia cracca*)

Plate 18

Throughout the summer the bright blue flower-clusters of the Tufted Vetch may be seen in hedges and bushy places.

*Perennial: Flowers June to September.* Rootstock, creeping. Stems, angled, two to four feet long. Leaves, pinnate, with many narrow oblong leaflets. The leaves vary in size, and may be as much as four inches long, ending in a branched tendril. Flowers, numerous, varying from ten to thirty, all directed to one side of the raceme, which has a stalk several inches in length, though the footstalks of the individual flowers are very short. The flowers are about half an inch long, bright blue, and hanging by their footstalks. Pod, many-seeded, beaked, one inch or less in length.

*Vicia* is the old Latin name for these plants.

**Bush Vetch** (*Vicia sepium*)

Plate 19

The Bush Vetch is very similar in general appearance, but has pale purple flowers. It is a frequent plant in hedges and bushy places.

*Perennial: Flowers April to September.*—Rootstock, creeping, giving off numerous runners, so that an old plant forms great masses. The leaves consist of six to eight pairs of oval leaflets, which vary in different individuals, in some having a squarish end with a central point, in others tapering shortly. The stipules are half-arrow-shaped. The pale purple flowers are produced in clusters of four to six from the axils of the leaves, and are succeeded by smooth blackish pods, an inch long, with a beak, and containing about eight seeds.

Other native species of *Vicia* are :



**SLENDER TARE** (*V. tetrasperma*). Stem, very slender, about two feet in height. Leaflets, four to six pairs. Flowers, singly or in pairs, pale blue. Pods with three or four seeds. Annual. Flowers May to August, in the hedges and cornfields.

**COMMON TARE** (*V. hirsuta*). Similar to foregoing species, but hairy. Flowers smaller, pods shorter, hairy, and containing two seeds only. In similar situations.

**WOOD VETCH** (*V. sylvatica*). Rootstock, perennial, creeping. Stems, three to six feet, scrambling and trailing over bushes and undergrowth. Tendrils, branched. Leaves, beautifully divided into six or eight pairs of leaflets. Flowers, white, streaked and veined with purple, and borne loosely in one-sided raceme, to the number of eight to eighteen. Flowers June to September. A beautiful species, found only locally in woods at high elevation.

**NARROW-LEAVED VETCH** (*V. angustifolia*). An annual with short trailing stem, and many slender leaflets; pale purple flowers, usually in pairs. Flowering from May to July in dry hedges, etc. Common Vetch (*V. sativa*), so largely cultivated as a fodder plant, is probably derived from this.

**SPRING VETCH** (*V. lathyroides*) is also an annual with prostrate stem less than a foot long. It is not unlike some forms of *V. angustifolia*, but much smaller. Leaflets, two or three pairs, narrow-oblong or egg-shaped. The small lilac flowers are solitary and stalkless. Flowers May and June, by roadsides and in dry pastures.

**ROUGH-PODDED VETCH** (*V. bithynica*), with purple flowers; **YELLOW VETCH** (*V. lutea*), with yellow flowers; and **BITTER VETCH** (*V. orobus*), with purplish-white flowers, are local species.

## Yellow Pea (*Lathyrus pratensis*)

Plate 19

The Yellow Pea or Meadow Vetchling is a very near relation of the garden Everlasting Pea, and an examination will show that they closely resemble each other in most points except size and colour. It is also very similar to the Vetches, but *Lathyrus* has fewer leaflets and broader petals. The plant is fairly common in meadow and copse, also on the hedge-banks, throughout the country.

*Perennial: Flowers June to September.*—Rootstock creeping underground, from which arise several sharp-angled stems. Leaves divided into two lance-shaped leaflets, with, in most cases, a short tendril springing between them. At the junction of each leaf-stalk with the stem there is a pair of very large



stipules, of the arrowhead type, and broader than the leaflets. The small, bright yellow flowers are borne in racemes of about a dozen, supported by a stalk an inch or more in length. The calyx is tubular, with five long awl-shaped points, and the large erect petal (standard) is marked with several sharp, thin purple streaks.

### Grass Pea (*Lathyrus nissolia*)

Plate 19

Until the flowers are out it would be idle to search for the Grass Pea, for it grows in meadows among grass, and it is got up to resemble a grass plant exactly.

*Annual : Flowers June.*—Stem, erect, about two feet, entirely without true leaves, leaflets, or tendrils. The leaf-stalk, however, is flattened out until it closely resembles a leaf of grass, and the stipules at its base greatly help the deception. Flowers, small, solitary, borne on a very long footstalk ; they are crimson in colour, and have the power of self-pollination. Pods, long, slender, becoming cylindrical.

There are eight other British species of *Lathyrus*, of which the following are most common :

**NARROW-LEAVED EVERLASTING PEA** (*L. sylvestris*). A local perennial with winged stems which climb in thickets to a height of six feet. The leaflets are very long and sword-shaped, whilst the stipules are sickle-shaped with lance-shaped ears. Stems and leaves, glaucous. There are from three to ten flowers in a raceme, and these have purplish wings with a rosy standard. Flowers June to August.

**MARSH PEA** (*L. palustris*). Another local perennial of glaucous hue, with winged stem (four feet), and the leaves divided into two or three pairs of sword-shaped leaflets, with half-arrow-shaped stipules. The flowers (two to six in a raceme) are pale-blue purple. Flowers June to August in boggy meadows and wet copses, from Yorks and Carnarvon to Suffolk and Somerset.

**SEASIDE PEA** (*L. maritimus*). Perennial of pebbly shores on the east and south coasts from Shetland to Kent and Dorset. It has an angular stem, not winged, about three feet long, which creeps prostrate over the stones and clings to them with its short tendrils. There are from three to five pairs of oblong leaflets, smooth and glaucous ; and the stipules are half-halberd-shaped. Flowers, five to ten in a raceme, purple, turning blue as they fade, June to August.

**YELLOW VETCHLING** (*L. aphaca*). It must be sought in the cornfield rather than the meadow, its long stems (three feet)

trailing and climbing among the corn. It has a particularly leafy appearance, but as usually met with has not a leaf. We may find leaves upon it, broken into a pair of oval leaflets, but the apparent leaves of older plants are greatly enlarged stipules of a spear-shape. The leaf-stalks finish off as tendrils. The flowers, which are pale yellow, and half an inch across, are borne singly on long footstalks. They are succeeded by curved pods about one and a quarter inches long. Annual. Flowers June and July. The plant does not occur north of Norfolk and Warwickshire, nor in Cornwall.

The genus is named from *Lathuros*, the Greek name of a plant mentioned by Theophrastus.

### The Rose Family (*Rosaceae*) Plates 19-22

**CHARACTERS.**—Herbs, shrubs, or trees. Leaves alternate (occasionally opposite), with stipules. Flowers, always regular. Calyx, five-lobed. Corolla of five petals, the blade mostly round, with a claw. The petals are inserted around the ovary, and whilst in the bud they overlap, as do the lobes of the calyx. Stamens as a rule numerous, with small anthers. Carpels vary in number greatly, from one up to many, and they may be distinct, connected, or attached to the calyx-tube. Styles may be free or united, and have simple stigmas. Fruit varies greatly, as may be suggested by the names of plum, cherry, blackberry, strawberry, apple, rose-hip, haw, and medlar. The family is extensive and world-wide in its distribution.

### Meadow-sweet (*Spiraea ulmaria*) Plate 19

The Queen of the Meadows, or Meadow-sweet, is found beside streams and in wet meadows. Individually the creamy-white flowers are minute, but combined in large, dense cymes they are very conspicuous. There is an airy grace about the plant, with its handsome much-divided radical leaves that is particularly charming, quite apart from the attraction of its powerful fragrance. In spite of their fragrance, the flowers produce no honey, but, attracted by the sweet odour, insects visit them in great numbers, and from the closeness of the flowers cannot help fertilizing them.

*Perennial: Flowers June to August.* Leaves, interruptedly pinnate, the terminal leaflet three-lobed. The undersides are downy and white. The stem-leaves are provided with broad-toothed stipules. The calyx has four or five lobes, turned back. Petals, four or five. Carpels vary from five to nine, curiously twisted, and surrounded by a large number of stamens.



There is one other British species:—

The DROPWORT (*S. filipendula*) growing far away from the haunts of the Meadow-sweet, delighting in high dry pastures, chalk downs, and gravelly heaths. Though of much dwarfer habit, and with larger flowers, it is in general appearance very similar. The unopened flowers are rosy, but the inside of the petals is of the same creamy-white as in Meadow-sweet. It is not fragrant. Perennial. Flowers June and July.

The name of the genus appears to have come from the Latin *spira*. Pliny mentions a plant under the name of *Spireon*, which appears to have been transferred to this genus.

### Wood Avens or Herb Bennet (*Geum urbanum*) Plate 20

On the borders of woods, in copses, and on shady hedge-banks the Avens is abundant. Its leaves probably attract more attention than its flowers, for these, being yellow, are likely to be put down as Buttercups. Formerly called Herb Benedict, afterwards contracted to Herb Bennet.

*Perennial: Flowers June to August.*—Stem as much as three feet in length. Rootstock, short, creeping. The radical leaves are long-stalked, the blade of the leaf broken up into distinct lobed and toothed leaflets, widely separated, and differing in size and shape; the terminal leaflet very large, the lowest ones very small. The stem-leaves are composed of three long leaflets, coarsely toothed. The stipules at their base are large and leafy, lobed and toothed. Flowers erect, solitary long, diverging footstalks from half to three-quarters of an inch in diameter. The calyx has five long, pointed lobes, with five pointed bracts alternating with them. The five petals are bright yellow, and spread themselves out flat, the calyx-lobes showing green between them. As in most roses, the stamens may not be easily numbered; the carpels, too, are numerous, and develop into a head of nutlets, each with a sharp curved hook at its tip, by which they catch in fur or feather, and so get scattered by bird and beast.

The only other British species is the WATER AVENS (*G. rivale*), a shorter and stouter plant, more hairy, with larger drooping flowers of purple calyx and orange petals. Flowers from May to July beside streams, and in damp copses.

The name is from the Greek, *geuo*, to have an agreeable taste, in allusion to the clove-like odour and flavour of the roots. The word Avens appears to be the same as awn, and both are



probably derived from the Latin, *avena*, an oat. It has reference to the awned fruits.

## Bramble (*Rubus fruticosus*) Plate 20

Individual examples of the Bramble vary so much from each other in small points that botanists are far from being agreed whether these departures from the typical form shall be regarded as varieties or as distinct species. The unprofessional botanist, no doubt, will prefer to regard each of these variations as being equally *Rubus fruticosus*. It abounds everywhere.

*Perennial: Flowers June to September.*—Stems thick and fleshy, liberally studded with hooks, prickles, bristles, or gland-tipped hairs. They have a habit of growing half-erect, to a great length, then arching over till the tip touches the earth, when roots are emitted and a new plant arises. Leaves, compound, usually with three or five, more or less oval, leaflets, arranged pinnately, toothed, dark-green above, paler beneath. The calyx forms a broad tube with five persistent lobes. Petals, five in number, white or pink. Stamens many. The numerous carpels are grouped upon a conical receptacle, each containing two ovules, of which only one develops into a seed. The fruit is a black or purple drupe like the Cherry, but very minute and stalkless, a large number being clustered together on the receptacle to form the so-called Blackberry.

The other species are :

**WILD RASPBERRY** (*R. idaeus*). Stems round, three to five feet, whitish, with straight, slender prickles; leaves white beneath. Calyx lobes with long tips; petals short and narrow, white; flowers drooping. The drupes are many in a cluster, red or yellow, and hoary. Flowers June to August in woods and heaths.

**CLOUDBERRY** (*R. chamaemorus*). Stem erect, rough, but devoid of hooks or prickles, four to eight inches. Leaves few, *undivided*, broadly heart-shaped, margin lobed. Flowers solitary; pistillate and staminate flowers on separate plants (*dioecious*); fruit white, one inch across. Sepals and petals oblong. Flowers orange-yellow, consisting of a few large drupes. Flowers June and July on high moors northward of Derby and Wales.

**STONE BRAMBLE** (*R. saxatilis*). With creeping rootstock and runners; stems of two kinds—one lying prostrate, two or three feet long, produces leaves and bristles only; the other erect, from six to eighteen inches, produces a few small white flowers, with very small petals. Leaves few, trifoliate, downy, doubly

toothed. Fruit consisting of two or three crimson drapes. Flowers June and July on stony places in copses and by streams in mountainous districts of the west and north only.

### Wild Strawberry (*Fragaria vesca*) Plate 20

Almost anywhere in these islands, on shady banks and in woodland clearings, we are sure to find this charming little white rose, with its trefoils and glistening red fruit.

*Perennial: Flowers April and May.*—Rootstock, woody and clothed in silky hairs. The rootstock bears three or four of the trefoil leaves, a runner or two starting off to plant out daughters at a little distance, and an ascending stem from a leaf-axil which bears flowers or fruit in an irregular cyme. The leaflets are egg-shaped or oblong, their edges cut into coarse teeth. The pure white flowers are about three-quarters of an inch across, the lobes of the calyx showing between the five petals. There is an epicalyx of five bracteoles which are slightly smaller than the calyx lobes. There are ten stamens, and the pistils are numerous. After fertilization has been effected, the receptacle gradually enlarges to such a size that the achenes, formerly packed closely together, are now widely separated. The so-called berry becomes red or white as it ripens, and its tissues filled with sweet juices.

The name is from the Latin *fragum*, derived from *fragrans*, in reference to the fragrant fruit.

### Barren Strawberry (*Potentilla fragariastrum*) Plate 20

The Barren Strawberry is one of the earliest of the flowering plants to make its presence known on dry banks under shelter of the hedge. It is often mistaken for the true Wild Strawberry, its second cousin, the resemblance of leaf and flower being sufficiently close. The Barren Strawberry has a branching rootstock, with a tuft of silky radical leaves and hairy stalks. The leaves of the Wild Strawberry have deeply sunken nerve-lines, whilst those of *Potentilla* have the upper surface free from such grooving. The petals in the present species are notched. The long runners, too, of the Strawberry, with the young plants attached, are another sufficient distinction during the flowering season; but when the fruit is well formed there is no need for consideration of the differences we have named. Instead of the



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Pl. 19.

1. Bush Vetch (*Vicia sepium*), p. 118.

3. Grass Pea (*Lathyrus nissolia*), p. 120.

2. Yellow Pea (*Lathyrus pratensis*)

4. Meadow

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receptacle swelling up, becoming juicy and red as in the Strawberry, we have in the barren counterfeit a mere cluster of dry achenes what would tempt neither eye nor palate.

*Perennial: Flowers early Spring.* The name is from the Latin *potens*, and refers to its powerful medicinal properties.

### Cinquefoil (*Potentilla reptans*)

Plate 21

On grasslands and roadside wastes, pretty well all over the country, one may find the neat leaves and long slender creeping stems of the Cinquefoil, and it may be passed over as one of the Buttercup family, owing to its golden flowers, though these are not really cup-shaped.

*Perennial: Flowers June to September.*—Rootstocks, woody, extending for a foot or more in the soil, black without and red within, and branching at their upper end to form several crowns. From each of these crowns run off in all directions slender stems, yards in length, clothed at intervals with long-stalked beautiful leaves. At frequent intervals, from the underside of the stem, fine roots are driven into the soil to peg the stems down. Leaves broken up into five toothed and egg-shaped leaflets, arranged finger-fashion (*digitate*).

The flowers are about one inch across, and arise singly on slender stalks from the axils of the leaves. The five petals alternate with the green sepals, which show between them. Below the sepals there is a set of bracteoles, which present an appearance of the calyx being double. The stamens and pistils ripen simultaneously.

### Silverweed (*Potentilla anserina*)

Plate 21

The beautiful and common Silverweed is botanically one of the Cinquefoils, although the leaf of this species has many instead of five divisions. It grows in dense patches by the roadside, and in wet pastures, erecting its long pinnate silky leaves and showing the silvery-shiteness of the underside.

*Perennial: Flowers June to August.*—Rootstock has many rooting runners. The toothed leaflets are not opposite, as may appear at first sight, but alternate; and there is the very peculiar arrangement of a minute leaflet being placed between each two large ones. The solitary yellow flowers are three-quarters of an inch, and borne singly on a long stalk arising from a leaf-axil. The calyx is cleft into five lobes, which

alternate with five longer and divided bracteoles; the petals are five, the stamens and carpels many.

Other species of the genus *Potentilla* are:

**SPRING CINQUEFOIL** (*P. verna*). A somewhat hairy, local plant, with prostrate stem, the leaves with five to seven oval leaflets, with rounded teeth towards the tips, and arranged finger-fashion; flowers few, yellow, half an inch in diameter, April to June.

**WHITE-LEAVED CINQUEFOIL** (*P. argentea*). Rootstock short, woody; leaves stalked, digitate with five narrow wedge-shaped leaflets, white and woolly beneath, and margins curled back; stems branched, leafy, six to eighteen inches, half erect or recumbent. Flowers, half an inch or less across, yellow, June and July, in dry pastures and roadsides.

**MARSH CINQUEFOIL** (*P. palustris*). Rootstock, long, woody; stems six to eighteen inches, purple; leaves, pinnate, with five or seven narrow, coarsely toothed leaflets; flowers, few; petals, five, small, dark purple. Fruit, like a strawberry, many achenes supported on a large, spongy, crimson receptacle, dry and persistent. Flowers June and July, in bogs and marshes.

**SHRUBBY CINQUEFOIL** (*P. fruticosa*). This is really a shrub, in which character it differs from all the other native species. It grows to a height of four feet, and sheds its bark in flakes; it branches freely. The silky leaves are pinnate, oblong in general outline, but the leaflets are arranged almost digitately. The golden-yellow flowers are over an inch across, grouped in small cymes, and show a tendency to become unisexual. Flowers June and July.

**TORMENTIL** (*P. tormentilla*) might be called a smaller edition of Cinquefoil, so similar is it. It differs in that the stem is wholly or partially erect, and rarely roots; the stem-leaves are not stalked, the leaflets are three instead of five, its petals four, and its flowers, which are not solitary, are about one-fourth less in diameter, whilst the bracteoles are much more slender than the sepals. Occasionally, however, it may be found with five leaflets, or with five petals. Flowers June to September in dry situations everywhere.

### Lady's Mantle (*Alchemilla vulgaris*) Plate 21

Although the Lady's Mantle offers little attraction by way of its tiny yellow-green flowers, its large, handsome radical leaves are beautiful in form and make the plant conspicuous.



It is found in moist pastures and near streams, especially in hilly localities.

*Perennial : Flowers June to August.*—Rootstock, thick, short, with radical leaves spread over very long leaf-stalks. Stems, slender, one foot to eighteen inches long, at first decumbent, afterwards more erect. Leaves, roundish or kidney shaped, cut into seven or nine lobes which have toothed edges. Each lobe is folded along the middle. Stem-leaves smaller and stalkless. The upper part of the stem branches into clustered sprays of very small flowers which have no petals. The pitcher-shaped calyx has five lobes and as many little bracts. Usually there are four perfect stamens attached to the mouth of the calyx.

ALPINE LADY'S MANTLE (*A. alpina*) is a smaller perennial, found only in the mountainous parts from Yorkshire northwards and in Ireland, at altitudes not lower than four hundred feet. The leaves, instead of being merely lobed, are cut to the base into five or seven narrow oblong leaflets, which are toothed only at the tips; the underside is clothed with white silky hairs, which gives it a silvery appearance. Flowers June to August, similar in character and colour to those of *vulgaris*, but smaller.

PARSLEY PIERT or FIELD LADY'S MANTLE (*A. arvensis*) is a common plant in fields and wastes on gravelly soil throughout the country. The stem branches extensively just above its base, and the leafy branches, three or four inches long, spread in all directions, rising but slightly from the ground. The small leaves have very short stalks, are fan-shaped and cut into three wedge-shaped lobes with toothed tips. The minute green flowers are in close clusters of about six opposite to a leaf, by whose stipules they are almost hidden. The whole plant is delicately hairy.

The name of the genus is of Arabic origin, and has reference to the former use of the plants by the alchemists.

### Salad Burnet (*Poterium sanguisorba*) Plate 21

Salad Burnet was formerly used as an ingredient in drinks and in the salad bowl, its leaves having a flavour very similar to that of cucumber. The plant may be found abundantly in dry pastures, especially in a chalk district.

*Perennial : Flowers June to August.*—The rosette of radical leaves spring from a stout rootstock. Leaves, pinnate; the coarsely toothed leaflets in pairs, with a terminal leaflet. Stems, slender, branched. Flowers, gathered into a purplish head. They have no petals, and are of two kinds; the upper ones have

a four-lobed calyx with a narrow mouth, from which two styles with brush-like stigmas are exerted; the lower bear both stamens and stigmas, or stamens only. The stamens vary in number from twenty to thirty, attached to the mouth of the calyx, and the anthers hang out. Flowers from June till August.

**GREAT BURNET** (*P. officinale*) was formerly regarded as constituting a separate genus, *Sanguisorba*, but it is very similar to the Salad Burnet. Its flowers, however, are all alike, and contain both stamens and pistils. It is much larger than Salad Burnet, and its flower-heads more cylindric, longer, and of a darker purple hue. The stamens, too, are reduced to four, and instead of hanging far outside the calyx, are no longer than the lobes of that organ. Leaflets are fewer and longer. Perennial. Flowers June to August in damp meadows.

The name *Poterium* is the Latin term for a drinking cup.

### **Agrimony** (*Agrimonia eupatoria*) Plate 22

One of the prettiest of wayside plants is the golden-starred Agrimony. Formerly it was held in some repute as a medicinal plant, and a yellow dye has been obtained from its rootstock.

*Perennial: Flowers June to September.*—Rootstock, short, woody. Leaves, "interruptedly pinnate," somewhat resembling those of the Silver-weed, the leaflets increasing in size as they near the terminal leaflet. Flowers, borne on a raceme, are little yellow roses, and consist of a top-shaped spiny calyx, tubular, with contracted mouth and five overlapping lobes; five golden petals, ten or more stamens, and two carpels sunk in the calyx-tube, their styles and two-lobed stigmas protruding. As the lower fruits ripen the raceme lengthens, and concurrently the calyx-tubes and their spines harden into a small bur and assume a drooping position, owing to the downward curving of their little footstalks. There is a sub-species (*A. odorata*) with resinous-scented, larger, more crowded flowers, of local occurrence.

The name is derived from the Greek word *argemone*, since corrupted into agrimony.

### **Dog Rose** (*Rosa canina*) Plate 22

The Dog-rose is the largest of the British roses. It forms a bush of considerable size, with long arching branches covered with broad hooks. It is common in hedges and copses.

*Perennial: Flowers June to August.*—Leaves, broken up into



five leaflets, each of which is sharply toothed. Flowers mostly solitary. Sepals, five, pinnate, and turned back towards the stem when the flower is open. Petals, five, pink and notched. Stamens, many. Styles free, hairy. The ovary is sunk in the calyx, which changes to the pitcher-shaped scarlet fruits—the "hips" of the schoolboy—in which are the hairy achenes. The "hips" vary a good deal in shape and colour.

The FIELD-ROSE (*R. arvensis*) is very similar to *R. canina*, but the flowers are generally in clusters, the petals white. Sepals falling off. Flowers June and July.

The BURNET- or SCOTCH-ROSE (*R. spinosissima*) is a much-branched shrub, with the leaves divided into seven or nine small leaflets. Stem, crowded with nearly upright prickles. Petals, white or pink. Fruit, nearly globular. Flowers May and June on heaths and in open spaces, chiefly on sand and chalk, especially near the sea.

SWEET BRIAR (*R. rubiginosa*), a small bush with erect or arching branches, set with hooked prickles mixed with glandular hairs and bristles. Leaflets, densely glandular and aromatic. Flowers, small, pink. Fruit, globose. Flowers June and July in bushy places, chiefly in South of England.

*Rosa* is the old Latin name for these plants.

### Crab Apple (*Pyrus malus*)

Plate 22

The Wild, or Crab Apple, as a rule, is a low tree of twenty or thirty feet stature, but sometimes is found as high as forty or fifty feet. The branches frequently develop thorns to indicate relationship with the Wild Plums. But the Crab is admitted here not as a tree but as a flower.

*Flowers in May.*—Leaves, rounded oblong, an inch or two long, toothed, on long stalks. Flowers, borne in few-flowered umbels; the rosy undersides of the petals give the tree a beauty that no other species of the genus *Pyrus* possesses. These flowers are an inch or more across, of the usual rose type, the five separate carpels being ultimately buried in the fleshy upgrowth of the flower-stalk, and become the "core" of the golden yellow, or fiery red, globular fruit, an inch or so in diameter.

*Pyrus* is the old Latin name.

### The Willow-Herb Family (*Onagraceae*)

Plates 22-23

CHARACTERS.—Herbs. Leaves, opposite or alternate, without stipules. Flowers, regular, two- or four-parted. Calyx, superior, with two or



four lobes. Petals, two or four, distinct, inserted at top of the calyx-tube. Stamens, two, four, or eight, inserted with the petals. Ovary, usually four-celled, with a thread-like style ending in a simple or four-lobed stigma. Fruit, a drupe, a berry, or a capsule with four cells.

## Rose-bay Willow-Herb

(*Epilobium angustifolium*) Plate 22

The Rose-bay or French Willow is a woodland plant, often covering extensive areas by means of its creeping underground shoots. One may often come across a glade that appears to be blocked by the straight close-ranked stems, four feet high, surmounted by the elegant racemes of rosy flowers.

*Perennial: Flowers July and August.*—Stem, smooth and unbranched. Leaves, lance-shaped, faintly toothed, shortly stalked, alternate, glaucous beneath. Flowers about one inch across, irregular, though they do not appear to be so. There are four purple sepals occupying the space between the claws of the rosy-purple petals, which are not opposite, as in most four-parted flowers, but paired irregularly: No. 1 pairs with No. 4, and No. 2 with No. 3. Between 1 and 4 there is a considerable gap, but it is filled by the eight down-bent stamens, of which four are long and four short. The short style is curved sharply downwards among the bases of the stamens until all pollen has been shed; then it quickly elongates, and its clubbed head separates into four long arms—the stigmas, which at first spread widely in the position previously occupied by the anthers, which have now shrivelled and turned back out of the way. Should the stigmas not soon receive pollen from a visiting insect, the petals fold over the stamens, and leave the stigmas—now curled back round the style—alone exposed. After fertilization, what appears to be the long stalk of the flower enlarges until it is stout, square, and three or four inches long. It is really the stalked ovary, and in due time it splits open and reveals the egg-shaped seeds, each terminating in a tuft of the finest, most delicate silken filaments of great length.

The name is derived from the Greek, *epi*, upon; *lobon*, pod.

There are about a dozen other British species, which differ from the Rose-bay in having regular flowers which do not open widely, but assume a bell-shape or funnel-shape. The flowers are all solitary from the axils of the leaves, and never in terminal racemes, as in the Rose-bay. They also have the calyx-lobes joined at their base, and the stamens are erect instead of bending down. The most generally distributed are:

**CODLINS-AND-CREAM** (*E. hirsutum*). a tall (three or four feet) rank plant that grows beside ditches and streams, with fleshy, creeping rhizomes, and stalkless, broad-lance-shaped leaves with small saw-like teeth. Flowers, rosy-purple, three-quarters of an inch across; anthers and stigmas mature at same time; petals, broad, with notched margin. Flowers July and August.

**SMALL-FLOWERED WILLOW-HERB** (*E. parviflorum*), somewhat similar to the last, but branched in upper part of stem only; leaves, lance-shaped, stalkless; flowers, one-third of an inch, rosy-purple; stigma lobes, short and not curled back. Flowers July and August on river-banks and beside ditches.

**BROAD-LEAVED WILLOW-HERB** (*E. montanum*). Stem, downy, erect, one to two feet. Leaves, with short stalks, broad lance-shaped, opposite, or in whorls of three. Flower-buds, drooping; flowers, one-third of an inch, pale purple. Flowers June and July, on shady banks and walls.

**SQUARE-STALKED WILLOW-HERB** (*E. tetragonum*). Stem, erect, branched, one or two feet high, angled or with two or four raised lines. Leaves, small, slender lance-shaped, mostly stalkless. Flowers, one-third of an inch, rose-lilac, inconspicuous. Flowers July and August in wet places in woods, fields, lanes, etc.

**MARSH WILLOW-HERB** (*E. palustre*). Stem, rounded, downy; leaves lance-shaped, soft, mostly opposite. Flowers one-sixth of an inch, rose-lilac, July and August, in bogs and marshy places. In this species the runners, which are common to all the species, form bulbs at their extremities in autumn, which become detached and form new plants.

## Enchanter's Nightshade (*Circaea lutetiana*) Plate 23

Along the glades of damp woods, standing close beside the thickets and the undergrowths beneath the oaks, will be found this tall, slender plant with its racemes of pale pink flowers.

*Perennial: Flowers June to August.*—Stems, erect, one to one and a half feet high. Leaves, broadly ovate or heart-shaped, two to three inches long, coarsely toothed. If the leaves be held between the eye and the light, the leaf-stalk will be seen to be studded with pellucid dots, after the manner of Perforated St. John's Wort. Flowers, white or pink, one-eighth of an inch across, in racemes. The flower is remarkable in spite of its smallness, for all its parts are in twos. The hairy, tubular calyx has two lobes, there are two heart-shaped petals, two pink stamens, and the ovary is two-celled, and when it develops into



an egg-shaped fruit, covered with hooked bristles, it will be found to contain two seeds.

ALPINE ENCHANTER'S NIGHTSHADE (*C. alpina*) is less than a foot in height, of stouter build than *luteiana*, with glossy heart-shaped leaves, which are more strongly toothed. The leaf-stalks, which are proportionately longer, are flattened, and expanded into wings along the sides. The petals are divided into two oblong lobes; the ovary is less bristly and one-celled, and the fruit contains but one seed. Flowers July and August in hilly woods in the north of England, and Scotland.

The genus is named after Circe, the Enchantress.

### The Loosestrife Family (*Lythraceae*) Plate 23

CHARACTERS.—Herbs or shrubs. Stems, quadrangular. Leaves, opposite or whorled undivided, without stipules. The persistent calyx is tubular or bell-shaped, inferior, and with three to six lobes, and as many alternating teeth. Petals, three to six, inserted in the calyx-tube. Stamens, six to twelve inserted in the calyx-tube, with versatile anthers. The ovary is two- to six-celled. Fruit, a capsule, enclosed in the calyx-tube.

### Purple Loosestrife (*Lythrum salicaria*) Plate 23

Often when traversing a bit of marshy country, or tracking the course of a stream or river, we are delighted to see the banks of the water-ways lined for a considerable distance by these tall-growing herbs, with numerous starry flowers of bright reddish-purple hue.

*Perennial: Flowers July to September.*—Rootstock, creeping. Stem, in some individuals with four angles, in others six, and in some cases as many wings; attains a height of three to five feet, branched. Leaves, opposite, or whorled, entire, lance-shaped. Flowers, reddish-purple, spiked racemes, one inch in diameter; they consist of a cylindrical calyx-tube with twelve teeth, of which the alternate ones are awl-shaped and longer than the others; four to six oblong petals, a two-celled ovary, and twelve stamens.

*Lythrum salicaria* is trimorphic—that is, the species produces three forms of flowers in different individuals; there is a long-styled, a short-styled and a mid-styled form, and each of these forms possesses two sets of stamens agreeing in position with the stigmas of the other two forms, and pollen grains that vary in size in proportion to the length of the stamens, and in colour





Pl. 21.

1. Cinquefoil ( <i>Potentilla reptans</i> ), p. 125.	2. Silverweed ( <i>Potentilla anserina</i> ), p. 125.	I. 1
3. Lady's Mantle ( <i>Alchemilla vulgaris</i> ), p. 126.	4. Salad Burnet ( <i>Poterium sanguisorba</i> ), p. 1	



also. These differences allow of eighteen methods of fertilization, but only six of these result in perfect fertility, as the small pollen grains only serve for fertilizing the short-styled flowers. None of the flowers can be fertilized by its own pollen.

**HYSSOP-LEAVED LOOSESTRIFE** (*L. hyssopifolia*), a smooth annual, with very narrow, lance-shaped leaves, chiefly alternate, and stems from six to eighteen inches long, prostrate or half-erect. It has small pink flowers, June to September, in swampy places, chiefly in the Eastern counties, Cornwall and the Channel Islands.

The name is from the Greek, *luthron*, gore, from the colour of the flowers.

### Water Purslane (*Peplis portula*)

Grows in wet ground around ponds and in moist hollows.

*Annual : Flowers July and August.*—Stems, smooth, prostrate, four-angled and red, spread around and root occasionally from the underside. Leaves, oval, in pairs, narrowing into short stalks. In their axils are produced the solitary, almost stalkless, purplish flowers. These consist of a bell-shaped, twelve-ribbed calyx, whose margin has twelve teeth, six of them broad and erect, the other six alternating with them, awl-shaped and spreading. The small petals are either wanting when the flower opens, or fall soon after.

The name *Peplis* was applied by the Greeks to the cultivated Purslane, and got transferred to the present genus.

## The Cucumber Family (*Cucurbitaceae*) Plate 23

**CHARACTERS.**—Prostrate or climbing herbs, with tendrils. Leaves, alternate, no stipules. Flowers, unisexual in small cymes. Calyx, five-lobed, superior. Petals, five inserted on the limb of the calyx. The male flowers have three stamens, and the females an inferior three-celled ovary, which becomes a many-seeded, one-celled berry. The White Bryony is the only British representative.

### White Bryony (*Bryonia dioica*) Plate 23

A climbing herb, common in woods and thickets in the south of England, and well known for its scarlet berries in autumn.

*Perennial : Flowers May to September.*—Root thick, soft-fleshed and branched, the flesh white. From this in spring rise several shoots covered with silvery bristles, which rapidly grow into long, trailing, rough, angled stems that scramble over hedge



or bush by means of a number of tendrils that coil spirally. Leaves, stalked, four or five inches across, covered with rough hairs on each side; in general outline heart-shaped, but cut up into from three to seven lobes, each deeply toothed. Flowers of two kinds, borne by the same plant: (a) with stamens only, (b) with ovary and stigmas only; sometimes on separate plants, as the name *dioica* indicates. The calyx and corolla are the same in both, but the female flowers are at once distinguished by the globular ovary beneath the calyx. The calyx-tube is bell-shaped, with five teeth, and the corolla of similar shape, cut into five segments of a greenish-white hue, marked by distinctly green veining, and hairy. The stamens are three, occasionally five. The slender style is divided into three stigmas, which are each cloven in two. The pistillate flowers develop into round berries, which become red when ripe, and contain from three to six seeds.

The name is from the Greek, *bruo*, to burst forth, in allusion to its rapid growth in spring.

The upper portion of the plate represents the male plant; the female flowers and the berries are shown below.

## The Stonecrop Family (*Crassulaceae*) Plates 23-24

CHARACTERS.—Herbs or shrubs, mostly succulent. Leaves, opposite or alternate, with stipules. Flowers, in cymes. Calyx is three- to five-parted. Petals agree in number with the divisions of the calyx, but may be united or distinct. The stamens agree with, or are double, the number of the petals, one attached to the base of each petal, and the extra ones where present inserted between. Carpels, three to five, usually distinct, but occasionally connected. Fruit, a cluster of three or more follicles.

### **Wall Pennywort (*Colyledon umbilicus*)** **Plate 23**

Without the distinctive "Wall" this plant is likely to be confused in popular nomenclature with the Marsh Pennywort of the umbelliferous family. An alternative name is Navelwort, and in Cornwall it is known as Penny-pies. It is found springing from the crevices of rocks and stone-built hedges, mainly along the western coasts of England and Scotland, and more sparingly along the south coast.

*Perennial herb: Flowers May to August.*—Rootstock tuberous, from which springs a loose cluster of thick circular leaves on long stalks. The footstalk is attached to the centre of the leaf, whose upper surface has a deep impression at that point; it is two or

three inches across and has the margins variously notched. Amid these radical leaves rises the flowering stems, which bear leaves of different shape: the lower ones spoon-shaped, the upper wedge-shaped. The stem, one to three feet high, is closely set all round with drooping greenish-white flowers. The flower consists of five sepals connected at their base, a long tubular corolla with the mouth four- or five-lobed, and within ten stamens and five pistils with thread-like styles. There is a glandular scale at the base of each pistil.

The name of the genus is from the Greek *koyle*, a cavity, in reference to the hollowed leaf.

### Biting Stonecrop (*Sedum acre*) Plate 24

Of the eight British species of *Sedum*, this is the best known. Chalk downs, rocks and old walls are its favourite resorts, the golden star flowers making a fine sight. It is also known as Wall Pepper.

*Perennial: Flowers June and July.*—Stems, growing downwards and curving outwards and upwards. Leaves, small, thick, produced into a kind of spur at the base, and closely pressing the older on the newer. Calyx, in one piece with five lobes. The corolla consists of five distinct golden yellow petals. Stamens ten, with yellow anthers. Carpels, five, united at their bases.

The other native species with yellow flowers are:

**CROOKED YELLOW STONECROP** (*S. reflexum*), with long, thick, awl-shaped leaves, three-quarters of an inch long. The flowering stems are one foot to eighteen inches high, with several shallow curves, and ending in a cyme of bright yellow flowers, each nearly one inch across, and mostly with six petals. Flowers in July and August on rocks, hedge-banks, old walls and roofs throughout the country.

**ST. VINCENT'S ROCK STONECROP** (*S. rupestre*), very similar to *S. reflexum*, but somewhat smaller, with shorter thickened and flattened leaves, arranged in five rows. Flowers golden yellow two-thirds of an inch in diameter. Found only on rocky cliffs in south-west England and Wales, and in Ireland.

Other species:

**ENGLISH STONECROP** (*S. anglicum*) forms matted tufts on rocks and turf-banks chiefly by the sea. Its habit is much like that of *S. acre*, but its thick little leaves are either glaucous or red, or a mixture of the two. Flowers white (or pink) stars, with crimson carpels and purple anthers, May to August. They are



about one-third of a inch across, produced at the summit of the short stems.

**HAIRY STONECROP** (*S. villosum*) is distinct from all others by reason of the glandular hairs with which it is covered. It is a biennial plant of boggy ground. There are only five or six flowers in a cyme, and these are white. Flowers June and July. It is not found south of Yorks and Westmorland.

**ORPINE or LIVELONG** (*S. telephium*). This and the next species are quite distinct from the foregoing, their leaves being broad and—leaflike! Orpine has a stout perennial rootstock from which a number of stout annual stems arise, about two feet high. Leaves, broad, egg-shaped or oblong, mostly concave, with large blunt teeth. Flowers, rosy or pale purple, with five petals, etc., borne in a dense terminal cyme; July or August. It occurs on stony or sandy banks.

**ROSE-ROOT** (*S. roseum*). Distinguished from the last-named by—among other things—the root being scented with the odour of roses. The stems are usually shorter, clothed with alternate glaucous leaves of an oblong or lance-shape. The smaller yellow or purple flowers have only four petals, and have stamens or pistils, not both. Flowers May to August, on moist rocks in alpine and subalpine districts. It does not occur south of South Wales and Yorkshire.

The name is from the Latin *sedeo*, to sit, from the peculiar habit of the plant.

## The Saxifrage Family (*Saxifragaceae*) Plate 24

**CHARACTERS.**—Herbs or shrubs. Leaves opposite or alternate. Stipules, if present, continuous with the expanded base of the leaf-stalk. Flowers in cymes, racemes, or solitary. Calyx, five- (or four-) lobed. Petals, five (occasionally four), but these are absent in Golden Saxifrage. Stamens equal to, or double, the number of petals, inserted round the ovary, which usually consists of two or more united carpels; in Saxifrage two-celled, but in the other British genera one-celled. The many-seeded fruit may be a berry or a capsule.

### **Three-fingered Saxifrage**

(*Saxifraga tridactylites*) Plate 24

The Three-fingered or Rue-leaved Saxifrage, with its pure white flowers, is one of the prettiest of mural plants.

*Annual: Flowers April to June.*—Stem erect, three or four inches high, covered with sticky hairs. Leaves chiefly from the



root, forming a little rosette; their general outline is wedge-shaped, but they are cut up into three (sometimes four or five) finger-like lobes. The leaves on the upper part of the stem are less divided. Flowers one-sixth of an inch in diameter, the five petals little longer than the five lobes of the calyx-tube. Stamens, ten; styles, two.

**MEADOW SAXIFRAGE** (*S. granulata*). Perennial. Stem hairy and sticky, producing little brown bulbils, the size of a pea, at its base. Leaves, smooth, kidney-shaped, cut into lobes: mostly radical. Flowers, one inch across, white, more or less drooping. Flowers April and May in patches, in sandy fields and hedge-banks.

**MOSSY SAXIFRAGE** (*S. hypnoides*), a pretty tufted plant of hilly districts north of North Somerset and Glamorganshire, where it forms moss-like cushions. The flowering shoots are five or six inches long, leafy or naked, supporting a varying number of white, bell-shaped flowers, one inch across, but often much smaller; May to July.

Name, Latin, *Saxifragus*, breaking stones, from the rock-loving habit of certain species.

## Golden Saxifrage

(*Chrysosplenium oppositifolium*) Plate 24

The Golden Saxifrage is found beside streams and on wet places in woods, where its insignificant flowers are often found in great numbers on the golden patches made by the Marsh Marigold.

*Perennial: Flowers April to June.*—Stems creeping, which root as they go, but keep the growing end in the air. They branch a good deal, and are well covered with nearly round, somewhat spoon-shaped leaves, nearly an inch across, the lower ones clothed with pale scattered hairs. These leaves are arranged in pairs on the stem. Towards the growing extremity of the stem both leaves and shoots are crowded, their rich dark green providing a good background to throw up the little cyme of golden flowers and bracts. Each flower, a sixth of an inch in diameter, consists of an urn-shaped calyx-tube with four broad spreading yellow lobes with green margins; no petals. When the flower opens the calyx segments curve over the eight anthers, which have not yet discharged their pollen, in order to give already mature two styles a chance of fertilization by pollen brought by insects from older flowers. They are succeeded

by thin two-lobed capsules, which open when ripe by a cross-shaped slit at the top.

The Greek name *Chrysosplenium* from *chrysos*, gold, and *splen*, the spleen, meaning the golden spleenwort.

ALTERNATE-LEAVED GOLDEN SAXIFRAGE (*C. alternifolium*) is very similar in general appearance, but is more tufted in habit, the unbranched stems growing erect to a height of about four inches, and the leaves, which are kidney-shaped, are arranged alternately on the stems, as its names imply. Commences flowering a little in advance of the other species.

### Grass of Parnassus (*Parnassia palustris*) Plate 24

It is a singular thing that some of our most beautiful plants grow in the most unpleasant places, and it is in black bogs and mossy swamps that we must look for the pretty and elegant Grass of Parnassus. The English name is a translation of that given to it by Dioscorides, among the six or seven hundred plants mentioned by him.

*Perennial: Flowers August and September.*—Rootstock stout. With few exceptions the leaves are radical; they are heart-shaped, smooth, with untoothed edges, and on long stalks. The flowering stems are long, angular, with a stalkless leaf nearly half-way up. At the summit is the solitary large white flower. The five thick sepals are slightly conjoined at their bases, the petals white, veined, and leathery. The ovary is large, and on its summit, without the intervention of a style, are the four rayed stigmas. Around the ovary are five stamens—there should be ten, but five have been transformed into scales, which alternate with the perfect stamens, and are fringed with white hairs, each ending in a yellow knob; on the face nearest the ovary each scale bears two small honey-secreting glands. The perfect stamens ripen in succession, and as each becomes mature, it raises itself until the anther comes on a level with the stigma but with its back to it. The front opens and discharges the pollen away from the stigma; but it falls where insects seeking the honeyed glands (using the ovary as a perch) will get it upon their forelegs, and so attach it to the stigmas of the next flower they visit.

### The Sundew Family (*Droseraceae*) Plate 25

CHARACTERS.—Perennial herbs. Radical leaves only, forming a rosette, and covered with glandular hairs. Flowers in revolute cymes on a long scape. The sepals and petals vary from four to eight, and



remain enclosing the fruit. Stamens, four or more, inserted below or around the ovary. Fruit, a capsule opening by two to five valves, and containing many minute seeds, which have a loose chafy coat.

## Round-leaved Sundew (*Drosera rotundifolia*) Plate 25

The Sundews, of which we have three native species, must be sought for in peat bogs, and in moist hollows on sandy heaths, where they grow in crowds; their crimson tints, and the sparkling of their globules of gum, give brilliance to their patch of bog.

*Perennial: Flower July and August.*—The leaves of *D. rotundifolia* arise from a slender rootstock, and lie on the ground in the form of a rosette, from the centre of which the tall, slender flower-stalks appear. Each leaf bears near the upper margins several rows of long crimson glands, terminating in rounded heads, and reminding one of a sea-anemone's tentacles; indeed, they serve a similar purpose. These glands secrete a clear, sticky fluid, which serves to detain small insects that crawl over the leaf. Their efforts to free themselves irritate the glands, which all bend over to the insect; at the same time the margins of the leaf-blade begin to become incurved, and the insect is effectually secured in the hollow, the soft parts ultimately being digested and assimilated by the plant.

The leaf in this species, as its name signifies, has a round blade, and this is attached to a long, hairy leaf-stalk. In the NARROW-LEAVED SUNDEW (*D. longifolia*) the blade is spoon-shaped, and merges insensibly into the smooth leaf-stalk. In the third British species, or LONG-LEAVED SUNDEW (*D. anglica*), the entire leaf is similar to that of *longifolia*, but twice the length. In neither of the long-leaved species are the leaves laid flat as in *rotundifolia*; those of *longifolia* are borne erect, whilst those of *anglica* are half erect.

The name is derived from the Greek, *Droseros*, dewy, in allusion to the bedewed appearance of the leaves.

## The Mare's-tail Family (*Haloragaceae*) Plate 25

**CHARACTERS.**—Aquatic herbs. Leaves, opposite or whorled. Flower, inconspicuous unisexual. In Water Starwort (*Callitriche*) there is neither calyx nor corolla, and in Mare's-tail (*Hippuris*) no corolla. The calyx when present is superior, with two or four lobes. Petals, two to four. Stamens, one to eight. Ovary inferior, mostly of two or four carpels; styles the same or half the number of the carpels. Fruit, two- to four-celled, or a cluster of one-celled drupes.



## Water Milfoil (*Myriophyllum spicatum*) Plate 25

These inconspicuously flowered plants must be sought in ponds, lakes, ditches, and sluggish streams.

*Perennial: Flowers June to August.*—The most striking character of Water Milfoil is the feather-like leaves. These are very finely divided after the manner of a comb's teeth (*pectinate*), and are mostly arranged in whorls of four. The green flowers are minute, arranged in whorls round a leafless stem, with *smaller* comb-like bracts in whorls of four beneath them. The sexes are mostly in separate flowers, but on the same spike, the upper ones staminate, the lower pistillate, and the intermediate whorls often containing both stamens and pistils. The male flowers consist of a four-lobed calyx, two or four concave petals, and two, four, or eight stamens. Female flowers with minute calyx and corolla, or none; a four- or two-celled ovary with four feathery styles; fruit a deeply lobed drupe.

WHORLED WATER MILFOIL (*M. verticillatum*). Flowers white, bracts *longer* than flowers, pectinate or pinnatifid, in whorls of five. Flowers July and August.

## Mare's-tail (*Hippuris vulgaris*)

A single aquatic species distinguished from *Myriophyllum* by its narrow, undivided leaves, set in a whorl of six or eight round the joints of the rounded stem. The small, solitary, stalkless flowers are set in the axils of the leaves; they are green, with red anthers. Flowers June and July in the shallow parts of ponds and lakes throughout Britain. Its name is from the Greek *ippes*, a horse, and *oura*, a tail.

## The Carrot Family (*Umbelliferae*) Plates 25-29

CHARACTERS.—Herbs. Stems, jointed, the joints usually hollow except at their extremities. Leaves, usually much divided, alternate on the stems, the leaf stalk with dilated base. The small flowers are rendered conspicuous by association in umbels in which the long foot-stalks, or rays, converge below to a common point; umbels often combined on the same plan into compound umbels. The small umbels have an involucre consisting of a whorl of *bracteoles* at the base of the rays; the compound umbels a whorl of larger bracts. All the flowers in an umbel are equal, and have both stamens and pistil; or the outer ones will be larger with unequal petals and no pistil. The superior calyx has no limb, or it is represented by five teeth. There are five petals inserted on the ovary. The five stamens mature before the stigmas; they have versatile anthers and incurved filaments. Ovary,



Pl. 23.

1. Enchanter's Nightshade (*Circæa lutetiana*), p. 131. 2. Purple Loosestrife (*Lythrum salicaria*), p. 132. 3. White Bryony (*Bryonia dioica*), p. 133. 4. Wall Pennywort (*Cotyledon umbilicus*), p. 133.

L. 14



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two-celled, with two erect or curved stigmas. Fruit, two much-compressed carpels, usually hanging from a slender axis (the *carpopore*). Each carpel has five or nine vertical ridges on its outer face, and between these in the substance of the walls (*pericarp*) are usually linear receptacles (*vittae*) containing aromatic oil.

This is a very large family, second only to *Compositae* in British flora. Members of the family are not difficult to recognise, as they have certain well-marked characters; the stems are hollow; the leaves, with few exceptions, are divided; the leaf-stalk at its base expands and forms a sheath; the flowers borne on long stalks arranged like the ribs of an umbrella; the flowers five-pistil, the ovary below the petals, and the fruit what is known as a cremocarp. Considerable difficulty, however, will be found in distinguishing one genus from another. The flowers do not help much, as in nearly all genera they are white, and the surest guide is the number of ridges and *vittae* in the pericarp.

### Marsh Penny-wort (*Hydrocotyle vulgaris*)

An aquatic herb found in bogs and marshes throughout the British Isles.

*Perennial: Flowers June to August.*—Stems creeping in mud. Leaves, undivided, round, on long stalks. Flowers, white or pinkish, minute, in short-stalked clusters (umbels).

From the Greek *hudor*, water, and *kolule*, a cup.

### Sanicle (*Sanicula europaea*)

Plate 25

Found in patches along the borders of woods, in old tree-shaded lanes, and in thickets.

*Perennial: Flowers May to July.*—Leaves spring direct from the stout creeping rootstock. They are cut into wedge-shaped fingers, the five lobes being each partially cloven into three, which have toothed edges. The smooth, unbranched stem is about a couple of feet in height, almost leafless. The umbels of flowers are so small, so irregular in form, that they do not look like umbelliferous flowers at first sight; yet they are not only umbellate, but compound umbels. The flowers are pinkish white, the outer row in each head bearing stamens only. They are succeeded by flattened oval fruits, densely clothed with hooked prickles, which ensure the wide dissemination of the plant by clinging to the coats of the smaller animals.

From the Latin, *sano*, to heal or cure.

### Sea Holly (*Eryngium maritimum*)

Plate 25

Almost without exception the British species of *Umbelliferae* have flowers white or yellow; the solitary exception is *Eryngium*.

whose colour is pale blue. The superficial observer may take it to be a Composite of the thistle section or a teasel, but it is a genuine umbelliferous plant, and on separating the flower-cluster and examining the flowers it will be found that the foot-stalks of these flowers have been suppressed, so that they form dense heads with a conspicuous whorl of rigid and spiny bracts. Looked at more minutely, the calyx-tube will be found to be scaly, with sharp teeth longer than the petals; the petals are narrow, and deeply notched, with a long point turned over towards the centre of the flower; it is known also as Sea Eryngo, Sea Hulver, Sea Holm, and is common on sandy shores.

*Perennial. Flowers July and August.*—Rootstock, creeping, gives off rooting branches. Stems, one to two feet. The radical leaves are nearly round, from two to five inches across, with a tough, hard margin and spiny lobes; those of the stem are more fully lobed in a palmate manner, but equally rigid and prickly, and the same character attaches to the bracts beneath the flower-heads. The whole plant is of that glaucous hue that is so common among our maritime plants.

A slightly altered form of the name used by Dioscorides, *eruggion*.

FIELD ERYNGO (*E. campestre*) is a plant of similar stature and appearance to the Sea Holly, but of a paler, less glaucous green, more erect and more branched. The radical leaves are broken up into three or five leaflets, and those of the stem are cut in a bipinnate manner, presenting a closer resemblance to the thistle than to the holly.

### Wild Celery (*Apium graveolens*) Plate 26

This is the plant from which the sweet, crisp stalks of our table celery have been evolved by the gardeners, though in its wild state it is acrid, coarse, and probably poisonous. It grows in ditches and marshy places not far from the sea.

*Perennial: Flowers June to August.*—Tap-root. Stem, stout furrowed, about two feet in height. Leaves, large, smooth, pinnate, or divided into three wedge-shaped leaflets, which are cut and lobed, and the lower ones stalked. Flowers greenish-white, compound umbels, the petal tips greatly curved inwards. There are no bracts. Fruit, roundish, laterally compressed. Carpels, five-angled, with a solitary vitta alternating with the primary ridges.

There are two other British species:

PROCUMBENT MARSHWORT (*A. nodiflorum*), one to 3 feet long,



not high; stem slender, creeping, or procumbent; flowering branches rooting at the base. Flowers small, white; in marshy places, July and August.

**LEAST MARSHWORT** (*A. inundatum*), four to ten inches long, stem stout, wavy, decumbent, or floating. Flowers white, very small, petals incurved; in wet places and pools that are dry in summer, June and July.

A name used by Pliny for an umbellifer.

## Goutweed or Bishop's-weed

(*Aegopodium podagraria*)

Although this umbelliferous perennial is distributed widely throughout the country, and in some places is found in very great abundance and luxuriance, it is not regarded as being a true native. Also known as Herb Gerarde and Ashweed.

*Perennial: Flowers June to August.*—Rootstock very long, creeping white, with aromatic odour and a pungent flavour. Stems, hollow, about two feet high, grooved. Leaves, large, triangular, broken into three leaflets which are divided in like manner. The stem branches above, and each branch bears a compound umbel of pure white flowers. The calyx is without teeth; the five petals are broad but unequal, the tips turned up and over. The flattened oval fruits have no oil-tubes between the ridges.

From the Greek, *aix*, goat, and *pous*, foot.

## Great Earth-nut (*Carum bulbocastanum*)

A rare plant found only in chalky fields in Herts, Bucks, Beds and Cambs, and often mistaken for *Conopodium majus*. This has a *black* tuber, an erect grooved stem with many branches, small bracts and bracteoles, minute calyx-teeth, and petals deeply notched. Flowers June and July.

## Burnet Saxifrage (*Pimpinella saxifraga*) Plate 26

Unlike so many umbellifers that prefer a moist situation, the Burnet Saxifrage is a plant of the dry upland pasture.

*Perennial: Flowers June to October.*—Stem, slender, round, furrowed, and branching, one to three feet high. Leaves, radical, pinnate, with from four to eight pairs of variable, almost round leaflets, which may be merely saw-toothed, cut into lobes, or



deeply in a pinnate fashion. They present a likeness to those of the Salad Burnet sufficiently close to have suggested part of the name. The few stem-leaves have the leaflets again pinnate, so that the whole leaf is *bipinnate*, with very narrow divisions of the leaflets. Flowers, flat-topped umbels, consisting of small white flowers, with petals deeply notched and a long point turned inwards. Fruit, broadly oval, smooth, with the two short stigmas curved outwards. A transverse section through the fruit shows each carpel to be five-sided, with slender ridges, and many *vittae* in the furrows between.

GREATER BURNET SAXIFRAGE (*P. major*) is very similar to the first-named, but much larger. The stem, which is from three to four feet high, is not round but angular. The leaves are all pinnate; the leaflets of the radical leaves broad, oval, somewhat heart-shaped; those of the stem-leaves narrower than those of the radical, but larger than the corresponding parts in *P. saxifraga*. The inner flowers are male only. Flowers July and August.

According to Linnaeus, *Pimpinella* is a corruption of *bipennula*, a name suggested by the bipinnate divisions of the leaf.

## Hare's-ear or Thorow-wax

(*Bupleurum rotundifolium*) Plate 26

There are four species of these remarkable plants included in the British flora, and all are rare. The present species is usually styled the *Common Hare's-ear*, but it is only common by comparison with its congeners. It must be sought on chalk downs and in fields on a chalky soil in the southern and eastern counties.

*Annual: Flowers June and July.*—Stem, round, slender, hollow, from one to one and a half feet in height. Leaves large and oval, the lower portion completely encircling the stem (*perfoliate*); they are distant, alternate, and glaucous; the edges innocent of teeth or other indentation. Flowers do not suggest an umbellifer at first sight. They are clustered in compound umbels, to which there is no involucre, but the small umbels have each from three to five very large leafy bracts that are united at their bases, and have the appearance of a corolla within which the minute yellow-green real corollas look more like anthers. Each of these tiny flowers consists of five petals with turned-in tips, and five stamens surrounding the two-styled ovary.



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Pl. 24.  
1. Wild Celery (*Pimpinella saxifraga*), p. 143.  
3. Hare's ear (*Lepus arvensis*), p. 144.

2. Burnet Saxifrage (*Pimpinella saxifraga*), p. 143.  
4. Common Water Dropwort (*Oenanthe aquatica*), p. 145.

K.145.



The other British species are rare and local.

This is the only genus of *Umbelliferae* with edges of leaves entirely uncut except *Hydrocotyle*.

From the Greek, *bous*, an ox, and *pleuron*, ribs.

### Water Dropwort (*Oenanthe fistulosa*) Plate 26

*O. fistulosa* is the most common of the six British species of this genus, though not so widely distributed as *O. crocata*, and may be found in most ditches, rivulets, and marshes throughout England, Ireland, and Southern Scotland.

*Perennial*: *Flowers July to September*.—Must not be confused with the Dropwort that is a species of *Spiraea*. All six species have white flowers. Fleshy, fibrous roots that burrow deeply into the mud, and are often swollen and tuberous. Stems rounded, two to three feet high. Leaf-stalks swollen and hollow (fistular). Leaves pinnate; those from the root with small wedge-shaped segments, those from the stem with the segments few and much narrower. Only the upper portion of the plant is shown in our plate, with one of the lower leaves. The umbel terminating the stem consists of three partial-umbels of tiny white flowers, all of which are fertile; but the branches bear umbels with a greater number of parts and sterile flowers. The individual fruits are about a quarter of an inch long, angular, with the two spiny styles still attached.

The other native species are:

**PARSLEY DROPWORT** (*O. lachenalii*); one to three feet, root-fibres cylindrical, never tuberous; stem, furrowed; leaves, twice-pinnate, those from the root soon perishing, segments bluntly lobed; fruit, broader than long, very small, rounded at top, with short, erect styles. Flowers July to September on fresh and salt marshes.

**HEMLOCK DROPWORT** (*O. crocata*); stem, two to five feet, fistular, grooved; root-fibres, spindle-shaped, one inch in diameter, parsnip-like; leaves, broad, wedge-shaped, twice or thrice-pinnate, segments wedge-shaped; umbels, many, on long rays. The fruits are narrow, almost cylindrical, quarter of an inch, with erect, rigid styles. Flowers July in marshes and ditches. Many fatal accidents have resulted from mistaking the roots for parsnips, or the leaves for those of celery. Juice turns yellow on exposure to air.

**CALLOUS-FRUITED DROPWORT** (*O. pimpinelloides*). Root-fibres, slender, with tubers towards the extremities. Stem, two or three feet, erect, furrowed. Leaves, twice-pinnate, the

lower with broad, short segments, the upper with long, slender ones, or reduced to stalks. Umbels, crowded, flat-topped. Flowers June to August in meadows.

**SULPHUR-WORT DROPWORT** (*O. silaifolia*). Root-fibres spindle-shaped, leaves twice-pinnate, the pinnae cut into slender rounded segments. Larger and stouter than the last mentioned. Partial umbels not crowded. Styles erect, rigid. Flowers June and July in wet meadows and ditches.

**FIVE-LEAVED DROPWORT** (*O. phellandrium*). Root spindle-shaped, with slender fibres. Stem stout, erect, as much as four feet long. Leaves twice or thrice-pinnate, finely cut with pinnatifid segments; lower sometimes submerged when the segments are hair-like. Flowers all containing both sexes, though the outer ones are slightly irregular. Flowers July to September in ponds and ditches.

The name is from two Greek words, *oinos*, wine, and *anthos*, a flower, in allusion to the vinous odour from the umbels.

### Fool's Parsley (*Aethusa cynapium*) Plate 27

Fool's Parsley is fond of cultivated ground, and it is no unusual thing for it to make its appearance in the very garden beds that have been set apart for rearing that pot-herb for which fools are said to mistake it.

*Annual: Flowers July and August.*—Root, spindle-shaped, fleshy. Stem, round, hollow, branched, and marked with fine longitudinal lines. Leaves smooth, compound, and bluish-green in tint. The wedge-shaped leaflets are themselves pinnate, and the pinnae are lobed. Flowers small and irregular, white, grouped in small umbels, which are again gathered into large umbels of umbels. The small umbels in *Aethusa* are provided with an involucre consisting of three or five bracteoles, very slender and hanging vertically; but the compound umbel has no bract. This feature will serve to distinguish *Aethusa* from all other umbellifers. It gets its generic name from the Greek *aitho*, to burn, from its acrid character, and its specific name is a combination of *Kynos*, dog, and *apion*, parsley, which is a further note of its worthless character.

### Fennel (*Foeniculum vulgare*) Plate 27

To see the Fennel in its native haunts we must seek the coast where there are cliffs, up whose face we shall find its tall, stout, jointed stems and umbels of yellow flowers.



*Perennial: Flowers August and September.*—Stem, three or four feet, round and tubular, but almost solid, quite solid at the joints, and grooved. Leaves so much divided that the divisions are merely many green threads. Flowers individually minute, the petals yellow, arranged in compound umbels. The carpels are half round, slightly flattened, and marked on the outside with five ridges, which indicate the lines of union of the sepals (which are adherent to the carpels) and the central keels of the sepals.

The genus bears the old Latin name for this plant.

### Samphire (*Crithmum maritimum*) Plate 27

The rambler who meets Samphire for the first time, unless it be in the flowering season, would probably regard it as having affinity rather with the Mistletoe than with the Wild Carrot and the Fool's Parsley. All its parts are thick and fleshy, and the leaves are so much dissected that some little consideration is required before their true outline can be made out. The whole plant is exceedingly smooth and covered with that glaucous "bloom" that is common to many seaside plants. The most conspicuous feature of the mature plant is the contrast between the yellowness of its umbels and the bluish green of the leaves and stems. It is found on cliffs, and rocks at the foot of cliffs, very close to high-water mark.

*Perennial: Flowers June to September.*—Rootstock, wedged tightly in crevices. Stem, one foot high. Flowers borne in fleshy compound umbels, but the whitish petals are minute and not nearly so striking as the yellow-green ovaries. These petals are broader than long, with a long point in the middle, turned over towards the stigmas, which form a thick, somewhat conical, disc.

From the Greek, *krithe*, barley, from a supposed resemblance between their seeds.

### Angelica (*Angelica sylvestris*) Plate 27

This exceedingly handsome perennial may be found in copses, on the margin of damp woods and in the near neighbourhood of streams and watercourses throughout the country.

*Perennial: Flowers July to September.*—Stem, stout, hollow, five or six feet high, occasionally eight or nine feet; it is tinged with purple, and smooth to the touch, in spite of fine grooves and ridges. Leaves triangular, two or three feet long, with



stout stalks which are expanded greatly where they embrace the stem. Like those of most umbellifers, the leaves are broken up into several paired divisions, and these are divided again into three pairs and an odd one of egg-shaped or lance-shaped leaflets with toothed edges. Above the leaves the stem divides into straight branches, each ending in a large compound umbel of white or pale purple flowers. Each simple umbel has a rounded top, and the arrangement is such as to give a similar convexity to the compound inflorescence. The petals are nearly equal, giving a regularity to the flower; soon after opening, the long stamens are rather more conspicuous than the petals. Fruit, two compressed oval carpels, whose outer ridges are expanded to form wings; in the intervening furrows of the three inner ridges are oil-tubes.

### Wild Parsnip (*Pastinaca sativa*) Plate 28

The Wild Parsnip should have a special interest for us as being one of the plants that man taught long ago to yield him nourishing food by the enlargement succulently of its rather wiry root; for the wild umbellifer that is so abundant on some of our wastes is the actual species that yields huge, tender, elongated cones in the deep rich soil of the kitchen-garden. Wild Parsnip is regarded as being a true native only in England; in Ireland doubtfully, and in Scotland the wild plants are the descendants of those escaped from cultivation.

*Biennial: Flowers July and August.*—Stem, stout, furrowed and hollow, two to five feet high. Leaves, large, stalked, cut into three or more pairs of bold-toothed oval leaflets, glossy above and downy beneath. The upper part of the stem bears many curving branches, each ending in a compound umbel of small, bright yellow flowers. Fruits, flat, broad-oblong, with slender ridges and dilated margins: an oil-tube in each furrow.

*Pastinaca* is the old Roman name for the Parsnip, from *pastus*, referring to its food value.

### Hog-weed or Cow Parsnip

(*Heracleum sphondylium*)

Plate 28

One of the most conspicuous constituents of the moist hedge-row and waste is the coarse-growing Hog-weed, or Cow Parsnip, with its great umbels of white flowers, and its broad, dust-covered leaves.



Pl. 27.

1. Fool's Parsley (*Aethusa cynapium*), p. 146.  
3. Samphire (*Crithmum maritimum*), p. 147.

2. Fennel (*Foeniculum vulgare*), p. 146.  
4. Angelica (*Angelica sylvestris*), p. 147.

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*Perennial: Flowers June to September.*—Stem thick, rough, grooved, and hairy; four to six feet; it is hollow, and its upper portion is branched. Leaves sometimes three feet in length, not nearly so much cut up as is general in the order; pinnate, but the leaflets, instead of being again pinnate, are simply lobed. Flowers compound umbels forming a large head of bloom, varying in tint from white to pink, the outer ring of flowers very irregular in form. Carpels have five ridges, one near each border, parallel with the outline, one down the centre, and one on each side of the last.

The dead hollow stems stand all the winter, and will be found a favourite resort of beetles and snails.

The name of the genus is derived from Hercules and refers to the strength and robustness of the plant.

### Earth-nut (*Conopodium majus*) Plate 28

Country children know the Earth-nut well, and how to find it, but grown-up persons have mostly lost the trick. Pigs never lose this knowledge, which comes by instinct, like the art of truffle-finding; therefore this plant is as often known as Pig-nut. Other names by which it is known in different localities are Ar-nuts, Jur-nuts, Yur-nuts, Earth-chestnuts, and Kipper-nuts. The "nut" is a tuber, growing as large as a chestnut, and brown in tint. We have often grubbed it up and eaten it raw, but it is said to be best when boiled or roasted like a chestnut, which it much resembles. It grows amidst the herbage of woods and heaths.

*Perennial: Flowers all the summer.*—Rootstock, tuberous. Stem, tough, slender, flexuous. Leaves, few and crowned with the compound umbel of small white flowers. The leaf is divided into three parts, and each of these is cut up into a number of thread-like portions, but the general outline of the leaf as a whole is a broad wedge-shape on a slender footstalk. There are no bracts, either to the partial or the compound umbels. The petals are heart-shaped with a turned-in point.

In certain districts another tuberous umbellifer may be mistaken for it, the Great Earth-nut (*Carum bulbocastanum*), see page 143. From the Greek, *konos*, a cone, and *pados*, a foot.

### Beaked Parsley or Wild Chervil

(*Chaerophyllum Anthriscus sylvestris*) Plate 28

This genus is sometimes subdivided into *Chaerophyllum* and *Anthriscus*, the former having a vitta between each rib and the

latter being without vittae. In May and June nearly every ditch and hedge-bank throughout the country is made beautiful by the delicate umbels of tiny flowers and the profusion of wedge-shaped leaves of lace-like fineness and intricacy of the Beaked Parsley, and if this common weed were to become extinct, much of the beauty of our lanes in late spring would be gone also.

*Biennial : Flowers May and June.*—Stem, stout, hollow, three or four feet, hairy below but smooth above, and furrowed throughout. Leaves, downy, wedge-shaped, twice or thrice pinnate, the leaflets being again cut pinnately and edged with large coarse teeth. The stem terminates in the light cluster of umbels, which has no bracts at its base, though the simple umbels have several lance-shaped, fringed bracteoles, which are green, more or less tinged with pink, and either turned down or spread out. The small flowers are white, and the point of each petal is turned over towards the centre of the flower. The fruits are about a third of an inch in length and smooth, without ribs or vittae.

BURR BEAKED PARSLEY OR CHERVIL (*C. anthriscus* or *A. vulgaris*) is of similar dimensions and appearance, but with smooth stem throughout, and less hairy than the preceding. The stem is swollen below the joints, and each compound umbel is opposite to a leaf. The flowers, though similar to those of *A. sylvestris*, are only half the size. The fruits are rough, with a short, smooth beak.

The name is a diminutive of the Greek *antheros*, in allusion to the small flowers.

### Hedge Parsley (*Caucalis anthriscus*)

This genus is classified as *Torilis* by some botanists. It flowers along the hedge-banks throughout the country when the Beaked Parsley has ceased blooming.

*Annual : Flowers July to September.*—Stem, from two to three feet high, solid, finely grooved, and covered with hairs that turn downwards. It is branched above, each branch terminated by a compound umbel of minute white or pink flowers, with four or six awl-shaped bracts beneath it. The hairy lower leaves are broken up into several oval-lance-shaped leaflets, which are cut into lobes and large teeth; the upper leaves at the base of the branches are simpler, of three leaflets or one, slender and deeply toothed. The fruits are oval, covered with awl-shaped spines.



**KNOTTED HEDGE PARSLEY** (*C. nodosa*), found on banks and dry wastes, chiefly in the south and in Ireland, flowers May to July. Its slender, wavy stem is less upright (often prostrate), varying from six to eighteen inches in length. The leaflets are very small, cut deeply from the sides. The small, but regular, pink flowers are in almost globular simple (not compound) umbels that are nearly stalkless. The spines of the oval fruits are minutely barbed.

**SPREADING HEDGE PARSLEY** (*C. arvensis*) is restricted to fields and wastes in England only, not reaching there into the most northern counties. Flowers July to September. It is an erect, much branched, bristly annual, not much more than a foot in height, and often half that length. Stem, solid, angled and leafy. Leaves, divided into narrow oblong leaflets which are cut into toothed lobes from the sides. The small, irregular, white or pink flowers are in compound umbels on long stalks. The dense prickles on the oblong fruits have hooked tips.

## Wild Carrot (*Daucus carota*)

Plate 29

The Wild Carrot is conspicuous in hedges, the waste corners of fields, and on the roadside; it is believed to be the plant from which the various kinds of Table Carrots have been evolved under cultivation.

*Annual or biennial: Flowers May to August.*—Stem, tough, branched, ridged and grooved, and densely clothed with white hairs, one foot to three feet high. Leaf-stalks flattened out broadly and clasping the stem. Leaves, very much divided, the divisions being pinnate like ferns, and the undersides are hairy like the stems. Flowers, small white, in umbels, and some forty or fifty umbels are gathered together in a saucer-shaped head. Each petal is notched on its outer edge, and a portion turned over towards the ovary. The little bracteoles of the small umbels are simple, lance-shaped, except the outer row, which have three of them branched. The tracts of the compound umbel are much broader, and deeply cut into about seven narrow segments. Fruits, oblong and convex, each carpel with seven ridges, four of which are armed with long, curved, distinct spines, and pierced with vittae.

*Daucus* is the old Greek name for the plant, as used by Dioscorides.



**Hemlock** (*Contum maculatum*)

Plate 29

This is supposed to be the same plant as that which supplied the state poison of Athens, by which Socrates was put to death. It lacks the aromatic qualities so general in umbellifers when bruised, and instead gives forth a fetid, mousy odour. It will be found generally distributed, growing in all sorts of waste places.

*Biennial or perennial: Flowers June and July.*—Tap-root. Stem smooth, more or less spotted with dull purple, with many branches from the upper part, two to six feet high. Leaves alternate, large, wedge-shaped, compound, and very fern-like, for the leaflets are opposite, distant, and themselves deeply cut in a pinnate manner. Flowers, small, white, in small umbels, and about a dozen of these are gathered into one large terminal compound umbel. In distinguishing this species from its allies, it is well to note that at the base of each little umbel there are three short bracts, all turned to one side (*unilateral*). The involucre of the general flower-cluster is composed of a large number of bracts, more equally disposed. The tips of the petals are turned over inwards. The fruits are in pairs, their inner faces flat, their outer form hemispherical, with thick, prominent, and wavy ridges.

The ancient Greek name is derived from *konos*, a cone or top.

**Alexanders** (*Smyrnium olusatrum*)

Widely distributed over the country, but met with chiefly near the sea, where often it is in great abundance. Inland, it is frequent about old buildings.

*Biennial: Flowers April to June.*—Stem, solid, stout, round and grooved, two to four feet high, crowned by dense, rounded, compound umbels of greenish-yellow flowers. Radical leaves, found chiefly in first-year plants, very large and glossy, the base of the stalks expanded into broad sheaths, and the blade divided into leaflets which are again cut into three oval and toothed segments. Stem-leaves smaller and simpler, being divided into only three parts. The individual flowers of the great umbel conform to the usual umbelliferous type, the calyx inconspicuous and the petals with the tips turned over towards the carpels. Fruit oval, dark brown; the carpels with three prominent ribs, between which are numerous vittae.

*Smyrnium* is the old Greek name for the plant.

## The Ivy Family (*Araliaceae*) Plate 29

**CHARACTERS.**—Shrubs or trees, the only British species, being a climbing shrub. Leaves, alternate, simple, or lobed. Flowers regular, associated in umbels or heads. The superior calyx is represented by a ring of five teeth, attached to the ovary. The petals are five, and the stamens correspond in number, and alternate with them, or are twice as many (in some exotic species). The stamens are inserted beneath the margin of the disk. Ovary two- to five-celled, with as many united stigmas. Fruit, a drupe or berry with one or more single-seeded cells.

### Ivy (*Hedera helix*) Plate 29

Common everywhere. In old woods and against ancient walls the Ivy may be considered as a tree, for though it does not stand alone, its trunk may be found nearly one foot in diameter.

*Evergreen perennial climbing shrub: Flowers September and October.*—Leaf, leathery, subject to great variation of form, though, with all its changes, one dominant character runs through them all, except its upper leaves, which are totally unlike. On its trailing and climbing branches it has five-lobed leaves, but when it has reached the top of the wall or the tree it puts on simple lance-shaped leaves. Flowers, yellow-green, in umbels. They consist of a calyx with five triangular teeth, petals and stamens five each, style one, with five obscure stigmas. The flowers are succeeded by blackish berries, sometimes yellow.

There is a common woodland variety, with smaller, narrower leaves, that never flowers; neither do those forms that persistently trail along the hedge bottom instead of climbing.

## The Mistletoe Family (*Loranthaceae*) Plate 29

**CHARACTERS.**—Evergreen shrubs, all more or less addicted to parasitism. Stems jointed frequently. Leaves, entire leathery, usually in pairs without stipules. They are attached to their hosts by means of modified roots which penetrate the tissues. Flowers, usually in groups of three, but in some exotic species they form spikes. The two sexes may be in the same flower or separate. The flower consists of a perianth of four to eight parts, which may unite to form a tube with thick lobes at the mouth. To each lobe there is attached a stamen, and the anther opens by slits or pores. The ovary is sunk into the receptacle, one-celled, and the style is either simple or absent. This develops into a false berry containing a single seed, which is surrounded by a layer of viscin which causes its ready adhesion to the bark of trees.



**Mistletoe** (*Viscum album*)

Plate 29

This is the only British representative of a large family composed mainly of evergreen semi-parasitic shrubs. The seed germinates in a crevice of the bark of the host tree, and the root takes the form of a sucker which penetrates the wood and branches among the tissues. In the wild, the Mistletoe is most likely to be found growing upon Poplar and Apple; various other trees are parasitized by it, but there are very few reliable records of its occurrence on the Oak, in spite of druidical legends to the contrary.

*Perennial: Flowers March to May.*—The short stem and its branches are round in section, clothed with a smooth yellow-green bark; the branches fork repeatedly, and bear at their ends usually a pair of leathery leaves, but sometimes there are three. These are two or three inches long, with a broad, rounded tip, from which the leaf tapers to the pointed base. One plant is male, another female; and the leaves of the male plant are broader than those of the female. The small, yellowish flowers will be found at the forking of the branches or between the leaf-bases. The males are usually in clusters of threes; the females may be in fives. There are four thick sepals, united to the calyx-tube, to which in the males are attached a corresponding number of dotted anthers—there being no filaments. In the females, the one-celled ovary is below the calyx, and has a simple stigma without a style. This and the receptacle develop into the so-called berry, pearly-white and about a third of an inch across, containing a single seed embedded in viscid pulp, which takes more than a year to ripen.

The flowers produce nectar, which renders them attractive to bees and flies, by which the pollen is transferred from bush to bush; and the shrub is indebted to birds for the distribution of its seeds. Their viscid coat makes them difficult to swallow, and they are rubbed off the bird's bill against the bark of a tree, to which they adhere firmly until germination takes place, in the position necessary for the plant's development.

**The Honeysuckle Family** (*Caprifoliaceae*) Plate 30

CHARACTERS.—Shrubs or small trees (a few herbs). Leaves, opposite, usually without stipules. Flowers in cymes. The three- to five-lobed or toothed calyx-limb superior. The corolla is five-lobed, sometimes



two-lipped, and the four to ten stamens are inserted upon the tube; anthers versatile. Ovary, one to six-celled, with a simple or lobed style. It develops into a drupe or a berry.

### Moschatel (*Adoxa moschatellina*) Plate 30

The Moschatel is a somewhat local plant, but very abundant wherever it occurs; and it is widely distributed over the country. It is apt to be passed over among chickweed and other low weeds of the hedge-bottom and the damp copse-side. It is but four or five inches in height, and its yellow-green flowers do not make up in prominence for its low stature, in spite of their musky odour, to which its popular and specific names are due.

*Perennial: Flowers March to May.*—Root, tuberous, from which run half-buried creeping rootstocks. Stems, erect, square, fragile, each bearing a pair of leaves. Each stem-leaf is cut into three leaflets; but there are also leaves that spring direct from the rootstock, and these may be cut into either one or two sets of three leaflets. The leaflets themselves are usually three-lobed. At the summit of the stem there is a yellow-green flower of which the parts are in fours, whilst immediately below it are four others of which the parts are usually in fives. This is the normal order of things in this species, but it is not invariably followed. The calyx forms a broad open cup with rounded bottom, the free margin with two or three lobes. The corolla is of the order called *rotate*, in which the lobes are not symmetrical, but appear to be rotating one after the other. The stamens are in pairs, each pair placed between the lobes of the corolla; and the attachment of the anthers to the corolla tube is what is known as *pellate*—that is, from the back like a button is attached. The short style separates into three or five stigmas, and the ovary develops into a succulent green berry. The name is from two Greek words, *a*, privative, and *doxa*, opinion, and signifies that the plant is of no account.

### Honeysuckle (*Lonicera periclymenum*) Plate 30

The Woodbine or Common Honeysuckle owes its popularity not only to the beauty of its flowers, but also to its strong, sweet odour, and in some measure to its graceful twining habit. The stem always twines from left to right. It is widely distributed in hedges, copses, and on heaths.

*Woody climber: Flowers all the summer.*—Stem, tough, ten to twenty feet in length. Leaves, egg-shaped, attached in pairs

the lower ones by short stalks, but the upper ones are stalkless. Flowers, clustered, the five-toothed calyces closely crowded. The corolla-tube may be from one to two inches long, the free end divided into five lobes, which split irregularly into two opposite lips. It is rich in honey, the corolla being often half filled with it, and consequently it is a great favourite with bees and moths, who are bound to bring and fetch pollen from the outstanding anthers of one plant and deposit it upon the equally obtrusive stigma of another. The flowers, yellow tinged with red, are succeeded by a cluster of round crimson berries.

The name *Lonicera* was bestowed by Linnæus, in honour of Adam Lonicer, a German botanist.

### The Bedstraw Family (*Rubiaceae*) Plates 30-31

**CHARACTERS.**—Slender herbs (sometimes with a woody base). Stems square. Leaves forming whorls. They have all small flowers in cymes on jointed footstalks. The calyx-limb where present is reduced to a ring above the inferior ovary, or has from four to six teeth. The corolla has from three to five lobes, and is either bell-shaped, rotate, or funnel-shaped. The stamens agree in number with the corolla-lobes upon which they are inserted. The two-celled ovary supports two styles with terminal stigmas. The fruit is a dry or fleshy *pericarp*, consisting of two one-seeded carpels connected by their flat sides.

#### **Wild Madder** (*Rubia peregrina*) **Plate 30**

Our only native species of *Rubia* was called *Wild Madder* to distinguish it from the cultivated species (*R. tinctorum*), which yielded the valuable dye-stuffs from which was obtained Turkey-red, Madder-brown and Madder-yellow—now produced synthetically. It is found chiefly in the counties bordering the English Channel, in rocky and bushy places not far from the sea, where it scrambles over other vegetation and among the loose rocks. It differs from the Bedstraws in its larger, broader and shining stiff leaves and their deeper green or bronzy colour. As it is an evergreen, these leaves may be found all the year when the Bedstraws have disappeared.

*Perennial: Flowers June to August.*—The old stems, woody below, are round and two or three feet long; but the spreading side shoots are four-angled, with deep furrows between the angles. Leaves produced in distant whorls of four to six; in shape they are elliptic or lance-shaped, their margins armed with prickly-teeth which are directed backwards. Similar prickles will be found along the midrib on the underside; also on the angles of







the stems. The minute yellow flowers are in loose clusters at the ends of the shoots and in pairs from the axils of the leaves: each consists of a rotate, five-lobed corolla, with five short stamens alternating with the lobes. The pistil has two styles with knobbed stigmas; instead of developing into a dry, prickly fruit, as in the allied Bedstraws, it becomes succulent and black.

The name of the genus is from the Latin, *ruber*, red, in reference to the red dye obtained from the roots.

### Goose-grass or Cleavers (*Galium aparine*) Plate 30

Goose-grass is an annual plant of the hedge, where it forms dense masses, often like curtains, the whole plant—stem, leaves and fruit—being covered with flinty hooks. The genus comprises nearly a dozen British species, distinguished by having minute yellow, white or greenish flowers, in which the calyx is a mere ring, and the honeyed corolla four- or five-lobed. There are four stamens, and two styles, united at their bases. The leaves are borne in whorls of from four to ten, at distant intervals on the square stem. It is distributed throughout the length and breadth of these islands.

*Annual: Flowers June and July.*—Stems often several feet in length. In *G. aparine* the leaves vary from six to eight, the flower-cymes arise from their axils, the flowers are white, the fruit first green, then becoming purplish. These fruits are really double, consisting of two globose lobes pressed together and bristling with hooked spines that cling to the fur or feathers of any creatures that have business in the hedgerows.

There are two other annual species:

**ROUGH-FRUITED CORN BEDSTRAW** (*G. tricorne*), which is very like *G. aparine*, but its leaves run away to narrower points. Flowers June to October, in cornfields on a chalky soil, but only as far north as Cumberland.

**WALL BEDSTRAW** (*G. anglicum*) is a much smaller species, with stems only one foot long and small greenish-white flowers. Flowers June and July in sandy places and walls in south-east England.

The name is from the Greek, *gala*, milk, and refers to the use of some species for curdling milk.

### Hedge Bedstraw (*Galium mollugo*) Plate 31

The Hedge Bedstraw, from its size and habitat, is liable to be mistaken for Goosegrass, although a momentary handling of the two species would furnish a test of their distinctness.

*Perennial: Flowers June to August*—a favourite position being the upper part of a grassy hedge-bank. Hedge Bedstraw has long weak stems, three to five feet long, not so stiff and brittle as those of *G. aparine*, nor furnished with hooks, but smooth or hairy, the angles of the stem rough or hairy. The leaves are broader than those of *aparine*, variable in form and size, with bristles on their margins, and generally six to eight in a whorl. Flowers small, white, in large paniced, horizontal cymes. The fruits are much smaller than those of Goosegrass, and are black and rough, but without the hooked bristles.

The typical form of the species is a trailer, but there is a sub-species (*G. erectum*) that assumes a more erect attitude.

Other perennial species with *white* flowers are :

**WATER BEDSTRAW** (*G. palustre*), with creeping rootstock and weak, branched, rough, trailing stems, as much as three feet long. The leaves are oblong lance-shaped, polished, with prickles on the margins; four to six in each whorl. Flowers, small, July and August, in marshes and ditches throughout British Islands, south of Sutherland. Fruit smooth.

**MARSH BEDSTRAW** (*G. uliginosum*), in general appearance much like the last-named, but the leaves (six to eight in whorl) narrower, stiffer, with a bristle point. Flowers, larger and fewer. Flowers July and August in similar situations, but extending north to Caithness, and rare in Ireland. Fruit, smaller, rough.

**HEATH BEDSTRAW** (*G. saxatile*) has a tuft of short smooth stems (six inches) produced from its rootstock, and these lie along the ground, giving off almost erect flowering shoots. The leaves are six in a whorl, and end each in an awn. Flowers, larger, July and August, on heaths and hilly places.

**CROSS-LEAVED BEDSTRAW** (*G. boreale*) is a smooth or downy plant, of tufted habit, with stiff, erect, branching stems, two feet high. The lance-shaped leaves are in whorls of four, each with three nerves. The cymes are in compact panicles. Flowers June to August, in rocky places and mountain meadows north of Yorkshire. The fruit is very small, covered with hooked bristles.

### Lady's Bedstraw (*Galium verum*) Plate 31

A perennial species with *yellow* flowers which make a conspicuous feature on dry banks and downs. One of its local names is Cheese-rennet, from a former use of the flowers to curdle milk for making Cheshire cheese. It has also been used as a dye, and it is said that when animals feed upon it, it reddens their bones.



*Perennial : Flowers June to September.*—The rootstock forms runners, and the more or less erect stems are smooth or downy, and square. The very slender leaves have their margins turned down, and their tips ending in a hard point ; they are in whorls of from eight to twelve. The numerous flowers are in dense cymes.

CROSSWORT (*G. cruciata*). A perennial with yellow flowers but very distinct from all the other species, by reason of its large, egg-shaped, pointed and hairy leaves, and their cross-wise arrangement, four in a whorl. The flowers are larger than those of Lady's Bedstraw, in few-flowered cymes, the outer ones containing stamens only ; April to June. The fruits are smooth and rather large. It is a plant of the hedgerow and copse, found throughout the country, but rare in Ireland.

### Woodruff (*Asperula odorata*) Plate 31

One of the old-fashioned favourites that used to be in request for scenting clean linen. As it grows in close patches in the wood or copse, it is a pretty enough object in its series of bright, shiny ruffs one above another, and its head of minute, ivory-white, funnel-shaped flowers surmounting all ; but it is then only slightly odoriferous. It is when its juices are drying up, after the plant is gathered, that it yields the sweet odour of new-mown hay. It is especially plentiful in beech woods.

*Perennial : Flowers May and June.*—Rootstock creeps underground. Stems, slender, erect, one foot or a little more. Leaves, smooth, borne in regular whorls of seven, eight or nine, that give the name woodruff to it. Flowers, minute, ivory-white, funnel-shaped, succeeded by tiny fruits covered with barbed bristles. The name of the genus is from the Latin *asper*, rough, in allusion to the hairiness of some species, though the present plant is perfectly smooth.

SQUINANCY-WORT (*A. cynanchica*) is a smaller plant, not odoriferous. It may be readily distinguished by the fact that there are but four leaves in each whorl or ruff, and of these two are smaller than the others. The flowers are much smaller than those of *odorata*, and pinkish on the outside of the corolla. It occurs in drier situations, such as hedge-banks. Flowers June and July.

### The Valerian Family (*Valerianaceae*) Plates 31–32

CHARACTERS.—British species all herbs. Leaves, opposite and not stipules. Flowers small, and, as a rule, irregular, disposed in forking cymes. The superior calyx-limb is lobed, or consists of a feathery

fringe which is at first rolled up and not apparent. The tubular corolla has from three to five unequal lobes. There are from one to five stamens, which are inserted at the base of the corolla-tube; the filaments slender, and so long that the versatile anthers are outside the mouth of the corolla. Ovary, three-celled, but only one cell is provided with a seed-egg; the style is thread-like, and ends in a blunt or lobed stigma. The dry fruit is small, and does not open.

### Spur Valerian (*Kentranthus ruber*) Plate 31

The noblest of our wall-plants. It is not truly wild in this country, but a visitor that has become naturalized on our old walls and occasionally in chalk-pits and railway cuttings. It is easily distinguished from Cat's Valerian by its leaves.

*Perennial: Flowers May to September.*—Stem, woody, from which many tough, smooth, round branches arise. Leaves, stalkless, lance-shaped, thick, of a grey-green hue, their broad bases sometimes with a few coarse teeth, but never cut up so as to have the smallest resemblance to those of *Valeriana*. The flower-head is bluntly conical, and the individual flowers are of very singular form. The calyx is a mere thickened margin to the ovary, but it unrolls and develops, after the fall of the corolla, into a feathery *pappus*. The corolla is very long (half an inch) and tubular, of the thickness of a stout pin, and ending in a hollow spur almost as long, but more slender. Held up to the light, this spur will be seen to contain honey. There are five lobes to the corolla, but one stands out strangely away from the others. The pistil, with its very slightly enlarged stigma, protrudes a sixth of an inch beyond the corolla; and the solitary stamen, with its purplish anther, is almost as long. Sometimes the corolla is white.

The name of the genus is Greek, and derived from *kentron*, a spur or goad, and *anthus*, a flower.

### Great Valerian (*Valeriana officinalis*) Plate 32

The Great or Cat's Valerian will come under the notice of the rambler whose way lies by the stream-side, through wet meadows or swampy woods. Where it is found it occurs in abundance. The roots have long been held in high esteem as a medicinal agent in certain nervous affections; and in some places the plant is known as All-heal. It has a warm, aromatic taste, but when drying, it develops a fetid odour, which acts as a charm upon cats.



1



2



3



4





*Perennial: Flowers June to August.*—Rootstock, short, increasing by suckers. Stems, from two to five feet high, bearing the broad corymbs of pink, flesh-coloured or white flowers. Leaves, narrow, pinnate. Calyx, five-parted, the lobes at first rolled inward, but as the fruit matures, these lobes expand and assume the form of a circlet of finely branched feathery hairs. Corolla, shortly tubular, with five lobes. Stamens, three in number. Stigma, two-lobed.

In the typical form, sometimes known as var. *mikani*, the leaflets are notched on one side only, but in the var. *sambucifolia* they are toothed all round. This is the form depicted in Plate 32.

SMALL MARSH VALERIAN (*V. dioica*) is chiefly found in boggy places. It has a creeping rootstock, and the root leaves are egg-shaped, with a long footstalk, whilst those of the stem are deeply lobed in pinnate fashion, with a large leaflet at the tip. The flowers, which are pink, are minute, variable in regard to size and number of stamens. Flowers May and June.

The name is from the Latin, *valere*, to be in health.

### Lamb's Lettuce (*Valerianella olitoria*)

This may be taken as the type of a small genus of inconspicuous-flowered plants allied to the Valerians. They appear on hedge-banks early in spring, with smooth, pale-green, narrow, oblong leaves, of a soft and brittle texture like those of the Lettuce, and send up a stem a foot high, which forks several times, the branches ending each in a whorl of about eight purplish bracts, within which are about six little cymes of minute lilac flowers. Flowers April to June.

### The Teasel Family (*Dipsacaceae*) Plate 32

CHARACTERS.—Perennial or biennial herbs. Leaves, opposite and no stipules. Flowers small (*florets*), crowded into a head protected in bud by an involucre of many bracts. The florets have each a smaller involucre (*involucel*) investing the calyx-tube. The limb of the calyx is superior and cup-shaped. Corolla funnel-shaped or cylindric, irregular, with four or five lobes, of which the outer lobe is largest. Stamens, four, inserted on the corolla-tube, with thread-like filaments, and versatile anthers projected beyond the mouth. Ovary, one-celled, with a thread-like style. The one-seeded fruit remains invested by the involucel.

The differences between the Teasels and the members of *Compositae*, which they very much resemble, are that the anthers of Composites are all joined together by their edges to form

a tube, while in *Dipsacaceae* they are free, and the calyx in *Compositae* is reduced to a series of hairs (*pappus*), whilst in *Dipsacaceae* there is a distinct tubular calyx invested in a separate involucre of tiny bracts, quite independent of the common involucre that invests the whole head of florets.

### Wild Teasel (*Dipsacus sylvestris*) Plate 32

A striking object in copse or hedgerow, its stout, angular, and spiny stems rising to a height of five or six feet, and crowned by the prickly-cylindrical heads of flowers.

*Biennial: Flowers August and September.*—It has radical leaves only during its first year, sending up the flowering stem the second season. These radical leaves are stalked, lance-shaped, with a stout mid-rib, which is armed with short, strong, curved spines. They lie flat on the ground in a rosette about a foot and a half across. Stem-leaves, opposite, not stalked, the lower couples joined together by their bases, thus forming a large cup, in which rain and dew collect and drown many insects that attempt to ascend the tall stem, their dissolved remains being absorbed by the plant for its partial sustenance. The flower-heads have an involucre consisting of from eight to twelve slender rigid bracts, spiny, longer than the flower-head, curved upward, and ending in a fine point. The corolla is purple, tubular, with four short, unequal lobes.

*SMALL TEASEL* (*D. pilosus*), a more slender plant, the stem not so tall or stout, and the prickles ending in soft hair-points. Leaves stalked, hairy. Flower-heads at first drooping, then erect; smaller, rounder, hairy, the involucre bracts shorter than the head. Flowers white; August and September, in moist hedges; not so generally distributed as *sylvestris*.

*Dipsacus* is the old Greek name.

### Field Scabious (*Scabiosa arvensis*) Plate 32

The pale lilac flowers of the Scabious are very plentiful in dry fields and downs throughout Britain.

*Perennial: Flowers June to September.*—Rootstock, stout. Stem, hairy. Leaves, vary considerably in different specimens, but usually those from the root are entire, of an oblong lance-shape, with toothed margins. Stem-leaves, lobed, sometimes almost pinnate. Flower-heads, borne on a long stout stalk, consist of about fifty florets, increasing in size from the centre to the outer margin, of a pale blue or lilac colour, the central



ones more inclined to red; anthers yellow. Corollas, usually four-lobed, those of the outer florets forming two lips. Involucral bracts broad and leaf-like, in two rows.

DEVIL'S-BIT SCABIOUS (*S. succisa*). Rootstock, short, coming to an abrupt conclusion, as though bitten off. Leaves, all entire. Involucral bracts, lance-shaped, shorter than the corollas, in two or three rows. Flowers, purplish-blue, sometimes white; anthers, reddish-brown. Florets nearly equal in size, four-lobed. Flowers July to October, in meadows and pastures, often covering large areas.

SMALL SCABIOUS (*S. columbaria*). Rootstock thick and woody. Root leaves entire, narrow. Stem leaves deeply cut, almost pinnate. Involucral bracts longer than the corollas, in one row. Corollas five-lobed, the outer row considerably larger than the inner ones, and of irregular form. Corollas purplish-blue. Anthers yellow. Flowers July to September, in pastures and wastes.

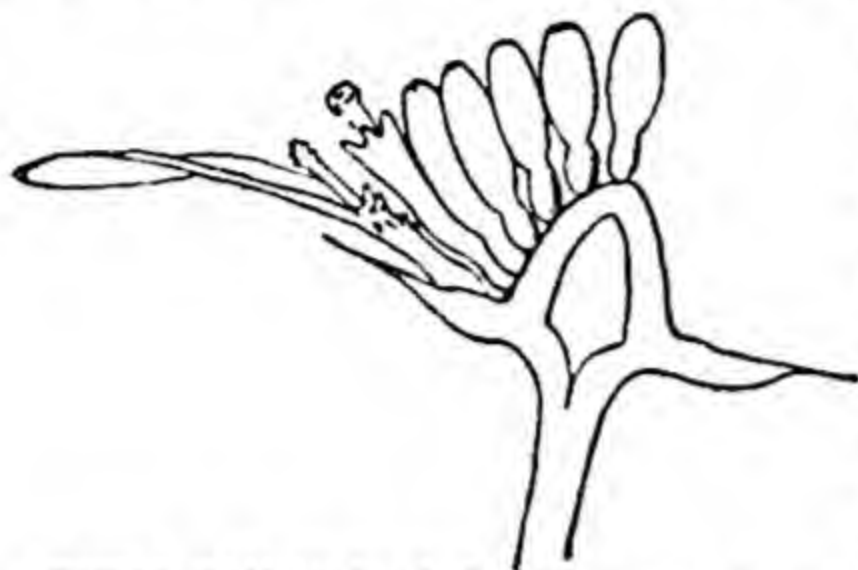
The name is derived from the Latin, *scabies*, the itch, it being formerly used in curing this and other cutaneous disorders.

### The Daisy Family (*Compositae*) Plates 32-4

CHARACTERS.—Herbs. Leaves mostly alternate, and no stipules. Flowers small (*florets*), crowded upon the dilated top (*receptacle*) of the flower-stalk, and enclosed in a general involucre of whorled bracts. The involucre of the Teasel family is here represented by scales or bristles standing up from the receptacle. The outer florets open first and the central ones last. Some florets are tubular and regular, four- to five-lobed; others *ligulate* or strap-shaped, and irregular. If a flower-head consists entirely of tubular florets, it is said to be *discoïd*; if the outer series, or the entire head, is of ligulate florets, the flower-head is *rayed*. The calyx-limb, if present, consists of hairs or scales. Stamens, four to five, inserted on the corolla-tube, the anthers connected to form a tube. Ovary, one-celled, surmounted by a style, whose upper portion usually splits into two arms. Fruit dry, one-seeded, often crowned by a buoyant *pappus* (as in Dandelion, Groundsel, etc.), which is a development of the calyx-limb.

This large family include as many as forty-five British genera, and in all of them the flower-heads will be found to be constructed in a similar manner. Some will be found to have no ray florets, and others to be composed entirely of ray-florets, and it is these modifications that give the distinctive characters to the various genera. If a daisy is examined, it will be found to consist of about two hundred and fifty florets of two very dissimilar forms: the central yellow or disk-florets, and outside

them the white and flat ray-florets. The yellow disk-florets will be seen to be tubular, with five lobes to the mouth, to indicate



Portion of Daisy-head showing arrangement of florets.

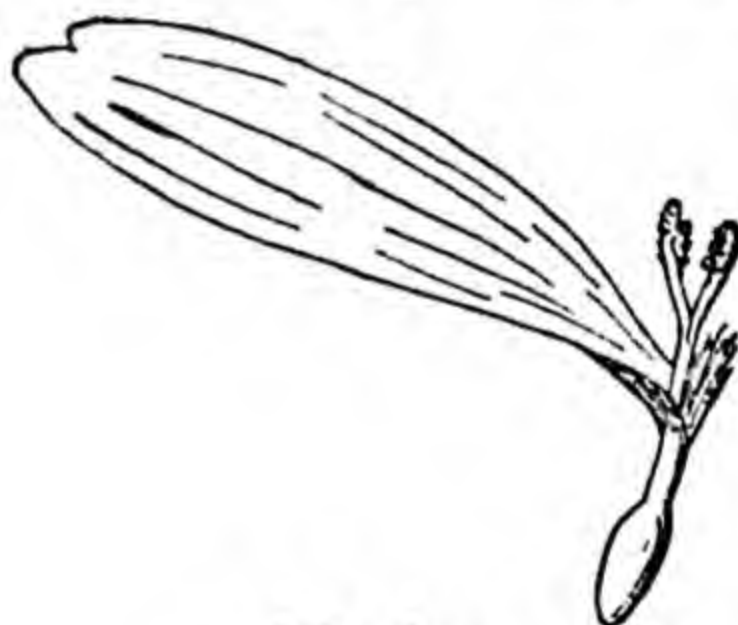
the five petals of which they are composed. These are packed closely side by side in the centre of the disk, while the head is made conspicuous by the ray-florets, or outer ring, having, two of these lobes enormously developed and coloured white.

The disk-florets contain both stamens and pistil, but the ray-florets have pistils only. The true

calyx is reduced to a few hairs, which afterwards develop into part of the fluffy "clocks," which reach a large size in Dandelion



A Disk-floret.



A Ray-floret.

and Goat's-beard. The apparent calyx is one or more rows of bracts below the flower-head, forming an involucre.

### Hemp Agrimony (*Eupatorium cannabinum*) Plate 32

This plant is rather fine when growing in a wood, or on the banks of the river where it has room to show itself; but too often it is crowded up in a dense mass of hedgerow vegetation.



Pl. 33.

1. Sea Aster (*Aster tripolium*), p. 165. 2. Blue Fleabane (*Erigeron acris*), p. 166.  
3. Golden Rod (*Solidago virgaurea*), p. 167. 4. Daisy (*Bellis perennis*), p. 167.

L. 163





Pl. 34.  
1. Marsh Cinchweed (*Stroph. alternatum*), p. 168.  
D. 168.

2. Ploughman's Spikenard (*Inula conyza*).  
L. 165.

and we see little beyond the great masses of dull, purple flower-heads. It has much of the erect habit of the hemp (*Cannabis*), and the leaves provide a further resemblance.

*Perennial: Flowers July to October.*—Stems, rounded, downy, three or four feet high, branched only at the top. Leaves, opposite, broken up into three or five lance-shaped, saw-toothed leaflets, which are from two to four inches long. The flower-heads are gathered into dense corymbs, which terminate the flowering branches. The involucre bracts are narrow, dry and translucent.

The flower-heads at first sight do not appear to belong to the great Composite order. This is due to the fact that very few flowers are included in each head, that they are all tubular, none strap-shaped as in the ray-florets of the Daisy; and that the involucre is so much shorter than the florets. It is, in fact, the simplest of our composite flowers, each head consisting of five or six florets only, as shown in this figure. These, viewed individually, will be found to have the mouth of the tube cleft into five lobes, and to contain five anthers and a long, branched style, nearly twice the length of the floret.



A single head of  
Hemp Agrimony.

*Eupatorium* was the classical name for the plant, said to be so called after Mithridates Eupator, King of Pontus, who discovered its medicinal virtues.

### Sea Aster or Starwort (*Aster tripolium*) Plate 33

The rambler along any of our coasts who comes upon a salt marsh in late summer will, in most places, see a plant whose bright purple-violet flowers remind him strongly of the Michaelmas Daisies of the gardens. This is the only British member of the Michaelmas Daisy genus.

*Perennial: Flowers July to September.*—Root, spindle-shaped. Stem, stout, erect, about one foot high. Leaves, long, smooth, fleshy, lance-shaped or oblong, sometimes slightly toothed. Each branch ends in a cluster of fragrant flowers two-thirds of an inch across, a composite head of tubular yellow disk-florets,

surrounded by a single whorl of ray-florets, which vary from purple-violet to almost white.

**GOLDBLOCKS** (*A. linosyris*) is an allied plant of great rarity, occurring only on limestone cliffs.

*Perennial : Flowers August and September.*—Stem, unbranched, wiry, one foot to one and a half feet high, clothed densely with very slender, dotted leaves, broadest above the middle. At the top of the stem is a dense cluster of yellow flower-heads that have no ray-florets.

The name of the genus is the Latin word for a star, the rayed flower heads having the conventional starry appearance.

### Blue Fleabane (*Erigeron acris*) Plate 33

On chalk downs and other dry places, in July and August, may be found an unassuming little plant, with composite flowers little more than half an inch across, whereof the disk is pale yellow and the rays pale purple. This is the Blue Fleabane, and according to its name the ray-florets at least should be blue; but their purple has more red than blue in it, and the pappus that succeeds the flowers is distinctly reddish. This pappus is really more distinct than are the short ray-florets, which never spread out as in most composites, but retain an erect attitude.

*Annual or biennial : Flowers July and August.*—Stems, branching, somewhat bristly, about a foot high, but frequently only a few inches. Radical leaves, broad-lance-shaped, without either divisions or teeth. Stem-leaves much narrower, and get more slender the higher up the stem and branches they are: they half clasp the stem. The involucre bracts are very slender, bristly, and in several series.

**ALPINE FLEABANE** (*E. alpinus*), found only on the Breadalbane and Clova ranges. A bristly perennial, with spreading, lance-shaped, radical leaves, and a few narrow, oblong leaves on the flower-scapes, which do not exceed a height of six or eight inches. Flower-heads from one to three only, about three-quarters of an inch across; involucre covered with long, weak hairs; ray florets purple, ligule slender, disk-florets yellow. Pappus, reddish. Flowers July and August.

**CANADIAN FLEABANE** (*E. canadensis*). An annual with much-branched hairy stems, one to two feet high. All the leaves are lance-shaped, broader near the ground, narrower near the flower-heads, some with a few teeth on the edges. The flower-heads are only a quarter of an inch across, the disk-florets pale yellow,



and the inconspicuous ray-florets white, sometimes tinged with purple or red. The slender involucre bracts are green, with thin semi-transparent margins. Flowers August and September, on wastes and railway banks.

The name of the genus is formed of the Greek words *eri*, early, and *geron*, an old man, from the aspect of premature age given to the flowers by the hoary pappus.

### Golden Rod (*Solidago virgaurea*) Plate 33

Found throughout the country in dry oak woods, heathlands, stony banks and rocky hill-sides on a sandy soil.

*Perennial: Flowers July to September.*—Stem, erect, slightly angular, smooth or downy, one to three feet, except when growing up sea-cliffs, when it may be reduced to a few inches. Leaves, lance-shaped, with slightly toothed edges, and arranged alternately on the stem; the lower ones stalked. The upper half of the stem bears numerous short branches, each supporting three or four slender flower-heads, the whole of them constituting a long golden spray. The lower part of the head is covered by overlapping bracts with thin (scarious) margins; and the golden-yellow ray-florets are few. The darker disk-florets only slightly exceed them in number. The downy fruit has a white pappus.

There is a form (var. *cambrica*) that occurs on mountains, which has the stem only a few inches high, broader leaves and fewer larger flower-heads.

The name of the genus is from the Latin, *solidare*, to consolidate, in allusion to its repute as a herb that would heal wounds.

### Daisy (*Bellis perennis*) Plate 33

This commonest of wild flowers may be found in all parts of the British Isles, blooming nearly all the year round. In sheltered parts of Southern England fields may be seen white with its blossoms even at Christmas time.

*Perennial: Flowers nearly all the year.*—From a firm, fleshy rootstock, several inches in length, the spoon-shaped leaves are produced in a rosette. The flower-scapes rise from the centre of this rosette to a height of from two to five inches, varying according to their surroundings. The structure of the flower has been described and illustrated on pages 163-4. The Daisy must be regarded as a flower-community, in which there is something like a division of functions. The yellow disk-florets show that their tubular corollas have been formed by the

union of five petals. Within we find that the anthers have also been united by their edges, forming a sheath within which lies the style with the two branches of its stigma pressed tightly together. The anthers come to maturity first, and when they shed their pollen it is all inside the sheath, and piled above the as yet closed and insensitive stigma-arms. The style lengthens and pushes the pollen out at the mouth of the corolla, where it gets deposited on the legs and underparts of insects that crawl over the flower-head in quest of honey. The style elongates until the stigmatic arms are clear above the mouth of the corolla; then they separate, and are ready to receive pollen brought from other flowers or florets by the same insects. The white strap-shaped ray-florets, if separated from the head, will be seen to resemble long tubes that have been split down one side and the material flattened out. When the ray-florets close up over the disk, as they invariably do at night and in wet weather, the stigmas are fertilized by being brought into contact with the pollen of the disk-florets.

The name is derived from the Latin, *Bellus*, pretty.

### Marsh Cudweed (*Gnaphalium uliginosum*) Plate 34

The Cudweeds are a neglected little genus of so-called everlasting flowers. There are but four British species, of which only two can be said to be fairly common. They are lowly herbs of an exceedingly woolly character, stem and leaves being alike covered with white hairs, whilst the scales of the involucre are of the peculiar character to which the term *scarious* is applied. They are stiff, dry, semi-transparent, retaining both form and colour for a very long period. Their flowers are small and unpretentious, the Jersey Cudweed being the only one having any claim to be considered beautiful.

MARSH CUDWEED (*G. uliginosum*) is an annual, with a number of short branches (four to six inches) rising from a prostrate stem. The leaves are narrow, simply stalked, cottony; those just below the flower-heads much narrower. The flowers are yellowish-brown, terminal on the branches. Flowers July to September in damp places on sandy heaths.

JERSEY CUDWEED (*G. luteo-album*) is also an annual, with many leafy stems, but of somewhat greater stature, varying from six to twelve inches. The leaves are long and narrow, with waved margins, and slightly embrace the stem (*half amplexicaul*). The flower-heads are pale yellow, in dense corymbs,



conspicuous; and the scales of the involucre are glossy. Flowers July and August in light soils in Norfolk, Suffolk, Sussex, and the Channel Islands.

**WOOD CUDWEED** (*G. sylvaticum*). Perennial, with a woody rootstock. Stem unbranched, nearly erect, one foot, downy. Leaves woolly beneath, not clasping stem. Flower-heads forming a long raceme, upper scales yellow or brown; lower cottony. Flowers July to September in woods, thickets, and pastures.

**DWARF CUDWEED** (*G. supinum*). Perennial, stem almost prostrate; flowering stems erect, forming low, woolly tufts. Leaves narrow, lance-shaped. Flower-heads small, brown, one, two, or three to each stem. Flowers July and August on the summits of the Highland mountains only, but there abundant.

The name of the genus is from the Greek, *gnaphalon*, soft down.

### Ploughman's Spikenard (*Inula conyza*) Plate 34

Found on dry banks and copses, but not north of York and Westmorland.

*Biennial: Flowers July to September.*—Stem, downy, erect, three, four or five feet. Leaves, large, oval-lance-shaped, somewhat rough above, downy beneath; the lower ones with footstalks, the upper ones almost stalkless. Flower-heads numerous, disposed in corymbs. They are yellow, but the ray-florets are very slender and thread-like, and though they possess a ligule, it is so short as to be quite inconspicuous. The scales of the involucre are long and narrow, overlapping, the lower ones with their tips curved outward.

Other native species of *Inula* are:

**GOLDEN SAMPHIRE** (*I. crithmoides*). A perennial, maritime plant, growing on rocks and in salt marshes, with stout stem, but little branched, one and a half feet. Leaves, exceedingly narrow, fleshy, smooth, and yellow-green, without footstalks; not toothed, but sometimes divided into two lobes at the top. Flower-heads one inch across, yellow, one ending each branch; ligule short. Flowers July and August.

**ELECAMPANE** (*I. helenium*). Perennial, three to five feet; leaves, large (radical as much as one and a half feet, saw-toothed, velvety beneath, oblong-lance-shaped, stalked); stem-leaves without stalks, heart-shaped. Heads of flowers three inches



across, yellow; involucre, leafy. Flowers July and August in meadows and copses.

The name is that of the Romans, and is said to be a corruption of *Helenion*.

### Common Fleabane (*Pulicaria dysenterica*) Plate 34

A common plant in marshy places, ditch-banks, and by the sides of rivers. Formerly used as a medicine in cases of dysentery.

*Perennial: Flowers July to September.*—Rootstock, creeping. Stems, branching, leafy, about a foot in height. Leaves, wrinkled and downy, oblong-heart-shaped, with toothed edges, and the base partially embracing the woolly stem. Flower-heads, yellow, about one inch across, produced at the ends of the branches. The ray florets are developed into long, slender straps. The involucre is woolly, its scales bristly.

**SMALL FLEABANE** (*P. vulgaris*), a rare plant, not found further north than a line drawn from Montgomery to Norfolk. It is a much smaller plant than *dysenterica*, and an annual. Stems, branching, downy, half a foot in height. Leaves, lance-shaped, slightly toothed. The yellow flower-heads do not exceed a quarter of an inch in diameter, with very short, erect ligules to the ray-florets. The involucre is downy instead of woolly. Flowers in moist sandy places August and September.

These two species are included in the genus *Inula* by some botanists.

The name is a derivative from the Latin, *pulex*, a flea.

### Bur-Marigold (*Bidens tripartita*) Plate 34

We have two species of Bur-Marigold native in this country. They are found in England, Ireland, and South Scotland. In general appearance they are very similar.

**TRIFID BUR-MARIGOLD** (*B. tripartita*). Annual. Flowers July to October. Stem, smooth, rounded, from one to two feet high, the branches arising from the axils of the leaves. These have winged stalks, and the lower ones are cleft into three (sometimes five) segments which have a few large teeth; the division of the upper leaves is irregular, and some of them are undivided, lance-shaped. The ultimate branches end in a solitary flower-head, consisting of brownish or greenish-yellow tubular florets with five teeth; there are no ray-florets. The heads are surrounded by a whorl of leafy bracts which spread

out and make them more conspicuous. The ribbed fruits have a pappus of two barbed bristles.

NODDING BUR-MARIGOLD (*B. cernua*) has a more robust stem, and the leaves are undivided and without stalks. They are oblong lance-shaped, with coarse teeth along the edges. The bases of a pair unite around the stem. The flower-heads are larger (an inch to an inch and a half across), and the pappus-bristles are usually four.

The name of the genus is Latin, and indicates the two teeth of the pappus as in *B. tripartita*.

### Ox-eye Daisy (*Chrysanthemum leucanthemum*) Plate 35

This well-known flower is commonly called the Dog Daisy, and in Scotland, where the Daisy is called a Gowan, it is known as the Horse-gowan. It is abundant in hayfields and pastures.

*Perennial: Flowers May to August.*—Stem, erect, slightly branched, one to two feet high. Radical leaves, on long stalk, coarsely toothed. Stem-leaves narrow, deeply toothed, and stalkless. Flowers like a big Daisy (page 164), except that the involucre consists of three or four series of scales with thin, brown, or purple edges, overlapping.

There are two other British species:

CORN MARIGOLD (*C. segetum*). Annual. Flowers June to September. A handsome weed of the cornfields. The flower-heads are the same size as those of the Ox-eye (about two inches diameter). Its ray-florets are of a deep yellow hue, their tips not notched, but divided into two lobes by a central indentation. The involucral bracts are broad, with wide margins.

FEVERFEW (*C. parthenium*). Like the Ox-eye, this is a perennial plant with a branched, erect stem, broad, pinnate leaves, downy and aromatic. The flower-heads are small (half to three-quarters of an inch), and are clustered in many-headed, flat-topped corymbs. The white rays are short and broad. Flowers July to September in waste places and hedgebanks.

The name is from two Greek words, *Chrysos*, golden, and *anthemon*, flowers.

### Scentless Mayweed (*Matricaria inodora*) Plate 35

There are several plants whose leaves and flowers, on a cursory glance, are alike, but to the botanist there are striking differences. We may take three Composite plants—this, the Chamomile, and the Stinking Mayweed—and at a slight distance they are alike,



but a touch will assure the non-botanist of their difference. Scentless Mayweed gives no perceptible odour; the Chamomile exhales that sweet aromatic flavour identified with its name; whilst the Stinking Mayweed responds to the touch with a fetid smell, and should our skin be very delicate, with a blister also. The Scentless Mayweed is often called Corn Mayweed, and is found in fields and hedges.

*Annual or biennial: Flowers June to October.*—Stem, one to one and a half feet high, with many soft, green branches. Leaves, alternate, stalkless, finely cut up into many exceedingly slender segments. If one be plucked and the divisions spread out, it will be seen that there is a very distinct *pinnate* arrangement, and that the segments are themselves pinnate. The head of flowers is large, two inches across, supported by a long, smooth stalk; the ray-florets large, white, ultimately drooping, and the yellowish disk convex. Involucral bracts edged with brown.

There is a var. *maritima*, found along our coasts, which differs from the type in being perennial, much more succulent, less erect, and with fewer flower-heads.

WILD CHAMOMILE (*M. chamomilla*) is very similar to the last. The flowers are smaller (half to three-quarters of an inch), borne in a corymb; rays short, blunt; disk *conical*; involucral bracts *without* brown edges. The leaves, when touched, give off a sweet odour similar to the true chamomile (*Anthemis nobilis*). Flowers June to August in fields.

The name is from the Latin, *matrix*, the womb, from its former repute as a remedy in uterine affections.

### Corn Chamomile (*Anthemis arvensis*) Plate 35

The Corn Chamomile is exceedingly common in the fields and waste places of some localities, whilst in other districts it is as rare.

*Annual: Flowers May to August.*—Stem, the lower portion prostrate, sending up erect branches. Leaves, alternate, twice pinnate. The flower-heads borne singly on long stalks; the involucre consists of a number of overlapping bracts, whose margins are dry and chaffy. The receptacle upon which the florets are packed is convex and covered with little chaffy scales, which stand up between the florets. Disk-florets yellow, ray-florets white. The whole plant is downy.

The name is an old Greek name for the Chamomile, from *anthemon*, a flower, probably owing to the profusion of its blossoms.





Pl. 35. 1. Ox-eye Daisy (*Chrysanthemum leucanthemum*), p. 171. 2. Scentless Mayweed (*Matricaria inodora*), p. 171. 3. Corn Chamomile (*Anthemis arvensis*), p. 172. 4. Yarrow or Milfoil (*Achillea millefolium*), p. 173. L. 172.



Other British species are two only :

**STINKING MAYWEED** (*A. cotula*). Very common in fields, wastes, and roadsides in the South of England, rare in the north. Annual. The plant is smooth or hairy, *not* downy, but the leaves are quite smooth, and covered with minute glands, which secrete a fetid-smelling and acrid juice, causing swelling of the hands in persons clearing fields of this weed. Disk-florets yellow, ray-florets white, usually without pistils. The flower-stalks are more slender than in *arvensis*, and the involucre bracts are narrower at their tips. Flowers June to September.

**CHAMOMILE** (*A. nobilis*). Perennial. Branches spreading from the root along the ground, leafy and furrowed, hollow. Leaves downy, aromatic. Flower-stalk long and slender; involucre downy and chaffy. The white ray-florets are sometimes wanting. Flowers in gravelly pastures and dry wastes in England and Ireland July to September. At one time in great favour for making chamomile tea, a remedy for indigestion.

### Yarrow or Milfoil (*Achillea millefolium*) Plate 35

One of the commonest weeds in pastures, or on commons, roadside wastes, and often on lawns.

*Perennial : Flowers June to end of year.*—Rootstock, creeping. Flower-stems, one foot high. Its leaves are cut up into a large number of segments; these are very slender and crowded, and are again cut up; so that the general aspect of the leaf is exceedingly light and feathery. This is especially the case with the leaves that spring directly from the creeping root; those given off by the flowering stem become more simple as they near the summit. Disk-florets, yellowish. Ray-florets, of which there are only five or six, white or pink. Only a few florets are combined in one head, but a large number of heads are arranged in a corymb, which gives the entire inflorescence an appearance very different from that of most Composite plants.

**SNEEZEWORT** (*A. ptarmica*) is almost as widely distributed. Its flower-heads are much fewer than in Yarrow, and its leaves are more simple in character, the edges being merely cut into teeth. The disk-florets are more green than yellow, and the ray-florets vary in number from eight to twelve. It is about a month later than Yarrow in coming into flower, but thereafter the two species keep time together.

The name *Achillea* was given to the genus, in honour of Achilles, who is reputed to have used Yarrow for the purpose of stanching his wounds.



**Tansy** (*Tanacetum vulgare*)

Plate 36

Time was when every cottage garden and every kitchen garden had its clump of Tansy, for it was a valued item in the housewife's pharmacopoeia, and was all but invaluable in cookery, especially so in spring. Puddings, cakes, and omelettes were contrived with Tansy as the principal ingredient. Having read this, try to chew half a leaf of Tansy, and you will realize what a revolutionary change in taste has come about in the last two centuries. All parts of the plant give off a strong aromatic scent when touched or handled, and the taste is exceedingly bitter.

The name is said to be a corruption of *Athanasia*, deathless.

*Perennial : Flowers July to September.*—With a creeping root-stock, from which arise beautiful broad, feathery radical leaves and flowering stems. The leaves are very deeply divided in a pinnate or bi-pinnate manner, the segments toothed. The angled stem reaches a height of two or three feet, and then branches off into a corymb of flower-heads. Each flower-head is enclosed in a half-rounded involucre of leathery bracts. There is an outer row of ray-florets, but they are very short, and of the same golden yellow colour as the disk-florets.

**Mugwort** (*Artemisia vulgaris*)

Plate 36

An aromatic herb of waste places which was used to give a bitter flavour to our drink. The allied Wormwood (*A. absinthium*) is still used for a similar purpose, as indeed is suggested in the name of *absinthe* given to the liqueur. We have four native species of Wormwood, as the *Artemisias* are generally termed, of which Mugwort (*A. vulgaris*) is the most widely distributed.

*Perennial : Flowers June to September.*—Stem, rough, red, from two to four feet high, shrubby at the base and branched above. Leaves, alternate, much cut into sharp-pointed segments, and silvery white beneath with silky down; alternate, stalked, the margins of the segments turned back. Flower-heads small, gathered into many short woolly spikes. They contain but a few tubular reddish-yellow flowers, which are wind-fertilized. The outer flowers contain no stamens, and the corolla has but three teeth. The inner ones have five teeth and contain only stamens, or stamens and pistil.

The other species are :

**FIELD WORMWOOD** (*A. campestris*), one foot high, with nearly smooth leaves, silky when young; not aromatic. The few narrow segments have their edges turned back. Heads small, drooping, numerous, in long racemes. Florets yellow, only the outer series producing seed. Flowers on sandy heaths in Norfolk and Suffolk only, August and September.

**COMMON WORMWOOD** (*A. absinthium*). Stems, one to three feet, with leaves silky on both sides, dotted; segments, many, their edges flat. Flower-heads, half round, silky, drooping in leafy, racemes. Florets, dingy yellow; outer only producing seed. Flowers August and September. Strongly aromatic.

**SEA WORMWOOD** (*A. maritima*), one to one and a half feet. Leaves, downy, segments flat. Heads narrow, in short spikes; Florets, reddish, all fertile. Flowers on seashores and salt marshes. August and September.

The genus is named after *Artemis*, the Diana of the Greeks.

### Coltsfoot (*Tussilago farfara*)

Plate 36

The Coltsfoot is one of those precocious flowers that hasten to break forth before the green leaves are ready. Its brilliant yellow flowers may be looked for any time after a cessation of frost. It is a genus of the *Compositae* easily distinguished from other genera by its peculiar leaves.

*Perennial: Flowers March to June.* Leaves, cobwebby, of a broad heart-shape, the edges angled and toothed, and the undersides white with cottony down. These leaves all spring direct from the rootstock, and may become nearly a foot across. Flowers, one to one and a half inches, bright yellow, borne singly on a tall, hollow scape that is covered with long, woolly scales. The slender ray-florets are female, the disk-florets both male and female, and the style pushes up through the tube of stamens and female, and the style pushes up through the tube of stamens its club-shaped top; for the two stigmatic arms, described under Hemp Agrimony, are here united, and cannot diverge. The flower passes, the scape lengthens, and supports a hoary head of soft pappus, to which the fruits are attached.

The name is derived from the Latin, *tussis*, a cough, from its reputation as a healer of chest complaints.

### Butterbur (*Petasites vulgaris*)

Plate 36

Formerly included in the same genus with the Coltsfoot, but now usually separated from it, the Butterbur shows its affinity in the general character of its much larger leaves and its habit



of flowering before foliation. In Butterbur the individual flesh-coloured flower-head is much smaller than that of Coltsfoot, and there are male heads and female heads; though the male heads contain a few female flowers, and the female heads a few males. The two forms of flowers are produced by separate plants. The male floret is bell-shaped, the mouth cut into five lobes; the female is a long slender tube with an obliquely cut mouth and a protruding pistil. All the flower-heads are gathered into a large dense panicle, contained in two very large bracts. The upper heads open first.

After the flowers come the leaves, which are, roughly speaking, kidney-shaped with irregular teeth, and attain a diameter of three feet. Like those of the Coltsfoot, they are white underneath, and cobwebby both above and below in their young state, but the upper surface afterwards becomes clean. They have a long leaf-stalk.

*Perennial: Flowers March to May* in damp meadows and green waterside wastes.

The generic name is derived from a Greek word signifying an umbrella, or head-covering.

### Groundsel (*Senecio vulgaris*)

Plate 37

This common plant is a familiar example of an important genus that contains some very striking species. There are about 500 known species, of which, however, only nine are native to Britain, though two others have got a footing here.

*Annual: Flowers all the year.*—Stem, erect, branching, six inches to one foot high. Leaves, alternate, deeply cut, the lobes irregularly toothed. Flower-heads, few, in close terminal corymbs. Ray-florets are usually wanting. The flowers are succeeded by the well-known fluffy pappus attached to the seeds, which has enabled the plant to become one of the most widely distributed in all temperate and cold climates.

The name is derived from the Latin, *senex*, an old man, and refers to the hoary seed-bearing head.

### Ragwort (*Senecio jacobaea*)

Plate 37

This handsome plant, though in its abundance a great nuisance to farmers, is very beautiful when acres of neglected land are painted with its rich gold. Also known as St. James's-wort, Stagger-wort, and Stammer-wort, and in Scotland as Stinking Willie.







*Perennial : Flowers June to October.*—Stem, erect, stout, well branched, leafy, from two to four feet in height, crowned throughout the summer by rich corymbs of bright yellow flower-heads. Leaves, lyrate, broken up by pinnate divisions into toothed lobes. The upper leaves have no stalks, and their connection with the stem is marked by a pair of auricles. The flower-heads are about one inch across, the rays spreading, and the involucre is bell-shaped.

Other species of *Senecio* are :

**MOUNTAIN GROUNDSEL** (*S. sylvaticus*). Leaves, similar to *S. vulgaris*, but divisions more accentuated. When the ray is present it is rolled back. The flower-heads are more numerous than in *vulgaris*. Annual, with unpleasant, fetid smell. Flowers on dry upland banks and pastures July to September.

**STINKING GROUNDSEL** (*S. viscosus*). More objectionable-smelling than the last. Leaves, broader, more divided, glandular, hairy, and viscid. Much branched and spreading. Flowers, larger, rays rolled back. Annual. Flowers on waste ground July and August.

**HOARY RAGWORT** (*S. erucifolius*). Similar to Ragwort, but the stem more loosely cottony; the segments of the leaves more regular and less divided. Rootstock, creeping, perennial. Flowers in hedges and roadsides July and August.

**WATER RAGWORT** (*S. aquaticus*). Like *S. jacobaea*, but of lesser growth, with laxer and more spreading corymbs. Flower-heads, larger. Leaves, less divided. Leaf-stalks, longer. Biennial. Flowers in wet places, riversides, ditches, July and August.

### Burdock (*Arctium lappa*)

Plate 37

A plant well known on account of its hooked bracts, which make the fruit-head an admirable instrument of torture. In its young state the plant is suggestive of the Butterbur, the fine bold lower leaves having a densely cottony underside as in that plant. It is common in all waste places.

*Biennial : Flowers June to September.*—Stem, stout, erect, branching, three or four feet, occasionally, six or seven feet. Leaves, alternate, heart-shaped, thick. The flowers are in dense heads, like a thistle, but without any spreading rays. The involucre is globose, of many leathery bracts, each ending in a long, stiff hook, by means of which the ripe heads become firmly attached to the coats of animals, and the seeds are thus carried far and wide. The corolla is five-lobed, purple.



The name is from the Greek, *arktos*, a bear, from its rough appearance.

### Saw-wort (*Serratula tinctoria*) Plate 37

Found among the low bushes on the outskirts of the wood, in copses, thickets, and occasionally on heaths. Common in England and the south of Scotland.

*Perennial : Flowers July to September.*—Stem, slender, grooved, branching, two to three feet long, more or less erect and leafy. The leaves show considerable variation on the same plant: the lower ones being cut deeply from the sides into sharply-toothed lance-shaped leaflets or segments, of which the terminal lobe is the largest and longest. The flower-heads are suggestive of those of a small Thistle. In form they are a long egg-shape, covered with closely overlapping bracts, of which the inner are purplish. The florets are red-purple. A comparison of several heads will reveal a difference between them: one has blue anthers and the two arms of the style keep close together; the other kind has white anthers and the arms of the style spread widely apart. The two are respectively male and female, for the blue anthers are filled with effective pollen, the white ones are not; the spreading style-arms are receptive of pollen, the closed arms not. The rough, oblong fruits are crowned by a tuft of dirty-white pappus.

The Latin name of the species (*tinctoria*) indicates that the Saw-wort is a dye-weed; it was employed formerly for dyeing woollen fabrics yellow.

### Milk Thistle (*Carduus marianus*) Plate 38

The genus *Carduus* has been subdivided into two genera, *Cnicus*, with feathery pappus, and *Carduus* proper, with simple-haired pappus, but the distinction is felt to be arbitrary, and it is now more usual to classify them all as *Carduus*.

The Milk Thistle is considered to be truly indigenous around the Mediterranean, whence it was transferred long ago to the gardens of Western Europe, including our own, the root, young leaves and flower-heads being utilized as food. The plants now found are descendants of those garden crops. It is separated as *Silybum marianum* by some botanists.

*Annual or biennial : Flowers June to September.*—Stem, branching, grooved, three to six feet high, free from prickles. Leaves in the first year form a large rosette, huge oblong-lance-shaped, cut into spiny lobes. These are dark green, curiously,

Intricately veined in white: a feature that renders the plant distinct from all our other Thistles. The flower-heads are globose, about two inches across, the spreading involucre bracts broad, leathery, with spiny margins and ending in a long spine-tipped point. From these emerge a splendid tuft of rosy-purple tubular flowers, followed by a white pappus.

### Musk Thistle (*Carduus nutans*) Plate 38

The bold dark leaves and large crimson flower-heads of the Musk Thistle make it a very handsome plant. It is fairly frequent in Southern England, especially on limestone soils, and the agreeable scent of its flower-heads has been compared to musk.

*Biennial: Flowers June to September.*—Stem, erect, without a branch, two to five feet, grooved, winged, and spiny, a condition which is helped by the leaves extending partially down it, and investing it with their long spears. Wings interrupted. The large flower-head, two inches or more across, hangs on its curved stalk in a drooping manner. The prickly bracts of the involucre are covered with a mesh of webbing, as though some industrious spider had been working upon it.

**WELTED THISTLE** (*C. crispus*). Annual or biennial, similar to *nutans*, but with small heads in clusters. Stem, one to three feet, branched, cottony. Wings, continuous. Leaves, lobed, cottony, beneath. Flowers, purple or white, in hedgerows and wastes, June to August.

**SLENDER-FLOWERED THISTLE** (*C. pycnocephalus*). Annual or biennial. Stem, one to four feet, with continuous wings, branched, hoary. Leaves with broad, toothed lobes. Bracts of involucre few; spines turned back. Flower-heads small, in clusters. Flowers, pale purple, on sandy wastes, especially near coast towns, June to August.

### Spear Plume Thistle (*Carduus lanceolatus*) Plate 38

One needs not to travel far in search of the Spear Thistle; almost any pasture, every hedge-side, and every piece of waste ground will furnish many specimens of this. A sturdy giant of its race.

*Annual or biennial: Flowers July to October.*—Stem, stout, erect, frequently five feet in height, with spiny wings down either side. The lance-shaped leaves vary in length from six



inches to one foot, and are deeply cut into strongly toothed lobes, each lobe partly divided into two, and each division ending in a long, sharp spine. They are bristly above and cottony beneath. The flower-heads terminate short branches, and hold themselves very erectly; the involucre is egg-shaped, cottony, one inch or more in diameter; its very numerous bracts are narrow, ending in long, sharp spines. From the narrow end of this egg-shaped mass the long purple corolla-tubes break forth as a soft plume, to be succeeded by the silky down that buoys up the shining seeds in their autumnal dispersion far and wide.

### Woolly-headed Thistle (*Carduus eriophorus*) Plate 38

The Woolly-headed Thistle demands much lime in its food, and it does not grow where the subsoil is not limestone or chalk. It is found only in England, mostly in the south.

*Biennial: Flowers July to September.*—In its first year it does not form a beautiful rosette like other of the biennial Thistles. Stem, sent up in its second year, furrowed, woolly, four to six feet high, with many stout branches which are nearly erect, each ending in a cluster of big flower-heads. The root-leaves of the first year are from one to two feet long and three to four inches wide, cut from the edges almost to the midrib into a large number of narrow lobes. These are divided again into a pair of lance-shaped segments, of which one turns down and the other up, each ending in a needle-like spine. The upper surface of the leaf is coloured a rich, dark green, and is bristly, whilst the underside is pale, with a coating of soft cotton. The stem-leaves are similar to those from the root, but the lobes have their edges cut into spine-tipped teeth, though this character is subject to variation. The massive flower-heads are of a depressed globular shape, about two and a half inches across. Immediately below each head is a ruff of long, slender bracts, needle-pointed and covered above with bristles. The heads are covered thickly with white wool through which emerge the green-tipped purple points of the overlapping spines that invest the head, whose spiral arrangement is revealed by the crossing semi-circular lines described by the points. These lines converge and are lost in a central depression, from which is thrust out the brush of purple florets set off by a touch of blue provided by the protruding stamens.

Other species are :

DWARF-PLUME THISTLE (*C. acutis*), whose spreading leaves





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Pl. 39.

1. Carline Thistle (*Carlina vulgaris*), p. 181. 2. Hard-heads (*Centaurea scabiosa*), p. 182.  
3. Goat's Beard (*Tragopogon pratensis*), p. 183. 4. Bristly Ox-Tongue (*Helminthia echinoides*), p. 184.

M. 1.



form so handsome a rosette in pastures, and whose stemless, solitary, crimson head looks so strange in the midst of the rosette. Perennial. Flowers July to September, especially on chalk downs.

**CREeping PLUME THISTLE** (*C. arvensis*). The common perennial plague of the farmer. Stems, two to four feet. Leaves, broad, lance-shaped, pinnately cut into numerous spiny lobes. Male and female flowers, on different plants, in separate patches; male involucre globular, female egg-shaped. Flowers, dull purple, July to September.

**MARSH PLUME THISTLE** (*C. palustris*). Biennial. Stem, two to four feet, stout, spiny. Leaves, soft, hairy, continued far down the stem as spiny wings. Flowers, dark purple; heads in leafy clusters; scales of involucre broad, keeled, purplish. Flowers in wet places July to September.

**MEADOW PLUME THISTLE**. (*C. pratensis*) A fibrous-rooted perennial with runners, whose leaves and stems are covered with cottony down. Most of the leaves are from the root, and are lance-shaped with wavy margins armed with small spines. These lower leaves have long stalks; those on the short, unbranched stem are stalkless, and half clasp the stem. The flower-heads are usually solitary—one to a plant—of fine form, the hemispheric involucre with its cottony bracts surmounted by the long and full brush of dark purple florets. Flowers in wet meadows and boggy places June to August, south of Yorkshire.

**MELANCHOLY THISTLE** (*C. heterophyllus*). There is some resemblance between the flowers of this and the last-named, but this has a tall branched stem that is much more than a flower-stalk. The perennial rootstock sends out runners like *C. pratensis*, and the lance-shaped leaves are white and cottony. The flower-heads are larger than in the last species, the involucre oval, and the florets red-purple. Flowers on mountain pastures July to September, north of Derby, Staffordshire, and South Wales.

### Carline Thistle (*Carlina vulgaris*) Plate 39

Found in dry upland fields and sandy ground throughout the country.

**Biennial**: Flowers July to October.—Stem, in second year, stout, tough, one foot high, branching several times when half-way up. Both stem and branches are well protected by very spiny leaves, which are sufficiently close together to make it



difficult to get at the stem without scratches and punctures. Leaves, lance-shaped, spiny, four or five inches long, undersides cottony, spread on the ground in second year. Stem-leaves, shorter than root-leaves, stalkless, their bases half clasping the stem. These leaves and bracts occur right up to the prickly heads, which are still further protected by the involucral bracts being spiny. The innermost circle of these bracts are coloured yellow and spread out. The florets are all tubular and purple, but they are mixed with yellow bristles, that come up from the receptacle, so that the effect of the purple is reduced. The involucral bracts, however, serve the purpose of ray-florets in making the heads conspicuous.

The name is said to commemorate Charlemagne, who made use of its medicinal virtues.

## Hard-heads or Great Knapweed

(*Centaurea scabiosa*)

Plate 39

The *Centaureas* are closely allied to the thistles, and share with them that hard-headedness which makes the thistle so good a type of the Scot. The Knapweed must be sought in the company of the thistles on dry wastes and in neglected corners of pastures.

*Perennial: Flowers July to September.*—Stem, grooved, slightly branched, two or three feet high, covered with soft hairs. Leaves, much cut up into egg-shaped segments. Nearer the summit of the stems the leaves are simpler, and reduced to a very slight width. The globose flower-heads have for involucre a number of cottony scales, with dark-brown margins and pale fringe. Ray-florets, bright purple, their free ends divided into five long, slender lobes.

Other species are :

**BLACK KNAPWEED** (*C. nigra*). Leaves, rough, entire or lobed, the lower ones with stalks. The heads globose, one and a half inches in diameter. Involucral scales, circular, brown, toothed. Florets, purple. Flowers in meadows and pastures June to September.

**BLUEBOTTLE or CORNFLOWER** (*C. cyanus*). Stem, thin, slightly branched. Lower leaves, long, narrow, much cut up; upper leaves, slender, less divided. Stems and undersides of leaves covered with loose cottony fibres. Scales of involucre greenish, with toothed brown margins. Ray-florets, five-toothed, bright blue; inner florets darker. Stamens irritable,

withdrawn into corolla-tube if touched. Flowers in cornfields July and August.

**STAR-THISTLE** (*C. calcitrapa*). A rare biennial, found only south of a line drawn from Norfolk to South Wales. Stem, stiff, about two feet high, much branched above and leafy. Leaves, cut in a pinnate manner, the distant lobes slender and ending in awned points. Flower-heads, less than half an inch across, surrounded by a few large bracts, smooth and yellow, with spiny teeth along their edges, and ending in a long, channelled spine. Florets, all tubular, rosy-purple. Flowers in dry waste places, July to September.

The name of the genus is based on a story of mythology, that the Centaur Chiron used one of these plants for the stanching of his wounds.

### Goat's Beard (*Tragopogon pratensis*) Plate 39

One of the folk-names of this plant is "John-go-to-bed-at-Noon," which is due to the fact that the flower is an inveterate early-closer. It opens about four in the morning and is closed by twelve. It is fairly common in meadows and wastes in England.

*Biennial: Flowers June and July.*—Tap-root, somewhat like a parsnip. Leaves, long, curling, grass-like, stalkless, that clasp the stem by their bases. Flower-heads, solitary, yellow, the eight involucral bracts united at the base. All the florets (like those of Dandelion, Sow-thistle, and Chicory) are rayed, and contain both stamens and pistil. They are invested with pappus hairs, which are stiff and feathered. It is from these "beards" the plant get its English name. The typical form of the species is seldom found in this country; in this form the involucral bracts scarcely exceed the rays in length. In the var. *minor*, which is the form usually seen here, the heads are smaller and the involucral bracts are twice their length.

From the Greek, *tragos*, a goat, and *pogon*, a beard.

### Bristly Ox-tongue (*Helminthia echinoides*) Plate 39

The Ox-tongue, though common in rough wastes and by roadsides on stiff soils, is frequently mistaken for the more familiar Sow-thistles. Like the Sow-thistles, it is full of a bitter, milky juice. The prefix bristly is well bestowed, for the plant is well covered with stiff hairs that branch into three minute hooks at their tips. These bristles spring from white swollen bases.



*Annual or biennial: Flowers June to September.*—Stems, stout, branched, two or three feet high. Root-leaves, broad, lance-shaped, stalked. Stem-leaves, stalkless and heart-shaped. A very distinctive character is given to the composite flower-head by five broad heart-shaped involucral bracts, which cover up the ordinary scales of the half-globular involucre. All the florets of the flower-head are starp-shaped, as in Dandelion and Hawkweed, and of a yellow hue. The stems and outer involucral bracts are marked with purplish red. The flower-heads are succeeded by fluffy hemispheres of white pappus as in the case of Dandelion. From the Greek, *Helminthos*, a worm.

### Hawkweed *Picris* (*Picris hieracioides*)

By some authors this is included in the same genus as *Helminthia*. It is a bristly plant of similar habit, but the outer bracts of the flower-head are short and narrow, and covered with black hairs. It grows in similar places to those affected by the Bristly Ox-tongue, and flowers from June to October. *Picris* is the Greek *Pikros*, in allusion to the bitterness of the milky juice that flows from the plant when the stem is snapped.

### Long-rooted Cat's-ear

(*Hypochaeris radicata*)

Plate 40

Cat's-ear is plentiful in meadows throughout the country, but is often confused with Hawkweed and Dandelion.

*Perennial: Flowers June to September.*—Tap-root, from which arises and spreads a circlet of many rough, hairy leaves, their edges scalloped; there are no stem-leaves. The flower-stem is branched, each branch bearing but one flower-head, which is more than an inch across. The involucral bracts are in several series, laid one over the other like tiles. All the corollas are strap-shaped, with five teeth at the free end, yellow. The pappus that surrounds the fruit consists of a row of feathery hairs, surrounded by an outer row of shorter bristles. The flowers are longer than the involucre.

There are two other British species:

SMOOTH CAT'S-EAR (*H. glabra*). Annual, found chiefly in dry fields on gravelly soil, but not nearly so commonly as *radicata*, for its heads are only half the size. Its leaves are broader, egg-shaped, and smooth. It has several branched flower-stems.



The involucre is almost as long as the florets ; the bracts are few and unequal. Flowers from June to September.

**SPOTTED CAT'S-EAR** (*H. maculata*). A rare perennial, confined to chalky and limestone pastures in Cornwall, North Wales, Westmorland, Cambridgeshire, Suffolk, Essex. Leaves rough with hairs, stalkless, egg-shaped, often with dark spots. Flower-stems seldom branched, usually with several small leaves and one large flower-head (sometimes several), one inch across. Involucre shorter than the florets ; outer row of pappus absent. Flowers July and August.

### Wall Lettuce (*Lactuca muralis*) Plate 40

Our native flora comprises no fewer than five species of wild Lettuce, but it must not be assumed that either of these is the origin of our garden Lettuce. In this country alone this has been cultivated for nearly three hundred and fifty years ; but it is thought the original may be looked for in *L. scariola*. *L. Muralis* is the most frequent and most widely distributed of the native species. It is often found in the places suggested by its name, but also in the hedgerow and on rocky banks.

*Annual or biennial : Flowers June to August.*—Stem, tall, slender, three feet. Leaves, *lyrate*, or lyre-shaped. The upper part is much lobed and jagged at the edges, whilst the lower portion is greatly attenuated ; its substance is dry and thin. Flower, small, with strap-shaped outer rays of yellow hue.

**STINKING LETTUCE** (*L. virosa*). Tall, erect, six feet. With prickly, glaucous leaves, branching stem, and spreading panicle of small pale yellow flowers. The upper leaves clasp the stem, and the few bracts have red tips. Flowers on banks and wastes July and August.

**PRICKLY LETTUCE** (*L. scariola*). Though its name signifies that it is more prickly than *virosa*, it is only so towards the base. In other respects it closely resembles *virosa*, but the branches are more erect, the points of the leaf-lobes more distinctly directed downwards, the flower-heads smaller. Flowers July and August.

### Corn Sow-thistle (*Sonchus arvensis*) Plate 40

This very handsome plant will be found in or around cultivated fields and waste places.

*Perennial.*—Rootstock, creeping, sending off runners. Stem,

hollow, milky, three to five feet high, and clasped by the bases of the finely cut leaves. These are deeply lobed, and edged with sharp teeth; the lower leaves have stalks, the upper have not. The unopened involucre is very broad at the base, and covered all over—as are the stems also—with short hairs with glandular ends of a golden yellow. In the var. *glabrescens* the glandular hairs are absent. The expanded flower-head is about two inches across, and is composed entirely of bright yellow ray-florets.

**COMMON SOW-THISTLE** (*S. oleraceus*). A common annual in every field and waste. General character of plant very similar to *arvensis*, but smaller. Stem, branching, two to three feet in height, without (or rarely with) the glandular hairs. Leaves clasping the stem, with arrow-shaped ears at base. Flower-heads many, pale yellow, not exceeding one inch in diameter. Flowers June to September.

Name supposed to be derived from the Greek, *sonthos*, hollow, in reference to the fistular stems.

### Dandelion (*Taraxacum officinale*)

Plate 40

This is a Composite flower, like the Daisy, but whereas the Daisy-head was seen to be made up of a host of tubular flowers, with a single outer row of strap-shaped ones, those of the Dandelion are all strap-shaped. It therefore stands as a representative of the second series of Composite genera—the Liguliflorae. All the genera of the Liguliflorae exude a milky juice if their stems or leaf-stalks are broken.

*Perennial: Flowers March to October.*—Tap-root. No proper stem, the leaves springing directly from the long, thick root. From their midst arise the bright yellow flower-heads on their hollow stalks. The involucre consists of a double row of bracts, the inner long, the outer shorter. The outer are turned back and clasp the stalk, the inner erect. Each floret is a perfect flower, containing both anthers and stigmas. The ovary is crowned by the corolla, which is invested by a pappus of soft, white, silky hairs, representing the calyx. Within the corolla the five anthers unite to form a tube, in which is the style, which divides above into two arms—the stigmas. After fertilization the corollas wither, the inner bracts of the involucre closing over them while the fruits grow. Then the bracts open again, each pappus spreads into a parachute, and the whole of them constitute a fluffy ball.



The name is believed to be derived from two Greek words, *Taraxos*, disorder, and *akos*, remedy, in allusion to its well-known medicinal qualities as an alterative.

### Stinking Hawk's-beard (*Crepis foetida*) Plate 41

The Hawk's-beards form one of several groups of yellow-flowered Composites with the florets all strap-shaped that are so much alike superficially. Stinking Hawk's-beard is found on chalky or gravelly banks only in the extreme south-east corner of England, from the Wash southwards.

*Annual or Biennial: Flowers June and July.*—Stem, faintly furrowed and branching freely from the lower part. Leaves, mostly radical, cut from the sides into wedge-shaped lobes whose tips point backwards. Stem-leaves, small and stalkless, lance-shaped, toothed deeply at the base. Flower-heads, with long stalks bright yellow, three-quarters of an inch across.

SMOOTH HAWK'S-BEARD (*C. capillaris*) is common in all parts of the country, on waste ground, field borders, walls and even cottage roofs. Annual. Flowers June to October. Stems, branched, furrowed, one to three feet high. Leaves, chiefly from the root, variably lance-shaped, their margins cut into small acute lobes or large distant teeth, whose points often are turned towards the root. Stem-leaves, stalkless, cut into long, slender lobes or large teeth, the lowest pair clasping the stem. Flower-heads, bell-shaped, with awl-shaped outer bracts, half to three-quarters of an inch across. The smooth, red-brown fruits have ten or more ribs, and the pappus is white and silky.

SMALL ROUGH HAWK'S-BEARD (*C. taraxacifolia*) shows a marked preference for chalk and limestone soils. It occurs only as far north as Yorkshire, and in Ireland. A bristly biennial. Flowers May to July. Stem, angular, furrowed, one to two feet high, branching above and purple below. Leaves, cut deeply from the sides into irregular lobes whose tips point backwards. Stem-leaves, stalkless, deeply toothed and clasp the stem. Flower-heads, nearly or quite one inch across; the outer florets are striped with red or purple on the underside of the straps. The yellow-brown, slender fruits have rough ribs and taper to a long bristle-point.

LARGE ROUGH HAWK'S-BEARD (*C. biennis*) is found on dry pastures and wastes on a chalky soil in South-east England, and the Midlands as far north as Yorkshire; whilst it appears also in the neighbourhood of Dublin. It resembles the Small Rough



species. Biennial. Flowers June and July. Stem, stout, four feet high, channelled and ribbed, much branched; whole plant bristly. Leaves, mostly from the root and the lower half of the stem, six inches to more than one foot in length, with the lobes irregular; upper leaves, few, lance-shaped, clasping. Flower-heads, three-quarters of an inch; outer bracts spreading.

BLUNT-LEAVED HAWK'S-BEARD (*C. mollis*) is a woodland plant found only between Yorkshire and Banff. Perennial. Flowers July and August. Stem, slender, two to three feet high, branching above. Radical leaves, smooth and spoon-shaped—broad at the tip, narrowing to the stalk; those of the stem narrow-oblong, stalkless, and half-clasping. Flower-heads, few, one inch or somewhat less across, their stalks and bracts coated with glandular hairs.

MARSH HAWK'S-BEARD (*C. paludosa*) is found in mountain meadows and moist woods between the North of Scotland and South Wales; occurring also in North Ireland. Perennial. Flowers July to September. Stem, slender, furrowed, one to three feet high, sparingly branched above. Radical leaves, large and thin, the general form oval-oblong, but cut into long lobes or teeth pointing downwards, and with a slender stalk. Stem-leaves, stalkless, lance-shaped, cut or undivided, contracted below, and clasping the stem with two "ears." Flower-heads few, covered with black, glandular hairs, one inch or nearly across. The ribbed, cylindric fruits have no beaks; and the pappus differs from that of all the other species in being stiff, brittle, and of a dirty brownish-white tint: in the others it is pure white and silky.

The name *Crepis* is derived from the Greek word for a sandal, which the leaves were said to resemble.

### Mouse-ear Hawkweed (*Hieracium pilosella*) Plate 41

Wandering over dry pastures and commons in summer we shall certainly see the flowers of this bright little weed freely distributed over the turf. Too commonly it is regarded by the non-botanical as a mere depauperated specimen of the dandelion; in fact, all low-growing yellow flowers of this type are popularly regarded as dandelions.

*Perennial: Flowers May to August.*—Rootstock, creeping, sending off leafy runners. Leaves, alternate, downy beneath and with long hairs scattered over the upper surface. Flower-stem, generally leafless, but sometimes has two or three small







leaves upon it; its top is downy, and there are glandular hairs among the down. Flower-head, solitary, with a somewhat bell-shaped involucre, the rays of the florets smooth, pale lemon-yellow, with red or brown stripes beneath.

The name from the is Greek, *hierax*, a hawk.

### Shrubby Hawkweed (*Hieractium boreale*) Plate 41

This is one of the tall Hawkweeds that present an appearance quite different from the dwarf forms. It will be found in copses and on hedgebanks from the south of England to the east of Scotland; also in Ireland. In spite of its shrub-like appearance, it is a herb.

*Perennial: Flowers August to October.*—Stem, tough, two to four feet high, lower part clothed densely with long, fine, white hairs. The radical leaves wither early. This is due largely to the large number of stem-leaves which, beginning at some distance above the ground, are rather crowded, the upper ones progressively reduced in size. These are of firm texture, dark green, the lower ones pointed oval or lance-shaped with a few distant teeth whose points are directed forwards; the small upper leaves are broader in proportion to their length, with the base rounded or almost heart-shaped. The flower-heads measure one inch across. Their strap-shaped florets have square ends cut deeply into five teeth; the long, two-branched styles are dark-tinted. Later, pale brownish pappus hairs crown a short, furrowed red fruit.

UMBELLATE HAWKWEED (*H. umbellatum*), a somewhat similar plant found in drier, more stony situations, may be distinguished by its shorter, more wiry stem, much narrower leaves, and the cluster of flower-heads approaching more nearly to the umbel formation. The styles, too, are yellow. Flower July to September.

WALL HAWKWEED (*H. murorum*), found on walls and stony places all over Britain, one to two feet high, with flower-heads in a small terminal corymb. May be distinguished from the former two species by its radical leaves being larger than the stem-leaves and not withering before the time of flowering.

### Chicory or Succory (*Cichorium intybus*) Plate 41

The Wild Chicory is peculiarly a plant of the dry roadside, especially in chalk districts, where its pale blue flowers are a striking feature.

*Perennial : Flowers July to October.*—Tap-root. Stem, erect, grooved, hairy, one to three feet high. The radical leaves, which are very similar to those of the Dandelion, spread themselves out, rosette fashion, upon the ground ; the few that are scattered alternately up the stem clasp the latter with the two lobes at their base. The flowers, pale blue, are usually in pairs and stalkless. The involucre consists of two series of bracts, the outer row being shorter than the inner, and turned back. There is no distinction between ray-florets and disk-florets ; they are all strap-shaped, broad, with a straight end notched into five teeth.

The generic name is from the old Greek word for the plant.

### Nipplewort (*Lapsana communis*) Plate 42

Another common and widely distributed weed which grows everywhere on waste ground and the borders of cultivated fields.

*Annual : Flowers July to September.*—Stem, branched, one to three feet high. Lower leaves, comparatively large, lyrate. There is a large terminal lobe, and a pair of narrow ones below it, the margins scalloped to produce distant teeth. The upper leaves are much smaller, lance-shaped, with their margins similarly toothed. Flower-heads, small, containing few florets, which are all yellow and of the strap-shaped kind. The involucre consists of a single whorl of bracts, which are slender and keeled. The bracts remain partially closed over the seeds (which have no pappus), the seed-head retaining an oval shape.

*Lapsana* is the old Latin name.

### The Bellflower Family (*Campanulaceae*) Plates 42-43

CHARACTERS.—Herbs with milky juice. Leaves alternate, without stipules. Flowers secreting honey, and discharging pollen before stigmas are mature. Calyx with the limb cut into five lobes, superior or half superior. Corolla in one, inserted on the calyx, five-lobed. Stamens five ; anthers meeting round the style and discharging their pollen against it. Ovary two- to eight-celled, style simple, stigmas two to eight, packed together until lengthening of style carries them clear of the ring of anthers, when they spread apart. Fruit a berry, or dry capsule, two or more celled, opening by lateral fissure, or by two or three valves at the top. Seeds many.

### Water Lobelia (*Lobelia dortmanna*) Plate 42

The Water Lobelia does not occur naturally south of Wales or east of Shropshire ; but there, and from the Lake District



northwards to Shetland, as well as in Ireland, it may be looked for on the bottoms of mountain lakes, especially those with turfy moors on their margins. Its vegetative parts are submerged entirely.

*Perennial: Flowers July and August.*—Rootstock, short, white, from which runners are given off, so that a single plant may form a mat. Leaves, half cylindrical, all radical, arranged in circles, with their blunt tips curved downwards. On cutting a leaf across, it will be found to be fashioned as a pair of tubes, side by side, running the length of the leaf, which is from two to three inches. A slender, hollow flowering stem, with only two or three bract-like leaves, is sent up to a height of one or two feet—according to the depth of water—and a little above the surface ends in a spray of pale lilac, drooping flowers. There may be eight or nine of these, from three-quarters to an inch long, with short foot-stalks. Each flower consists of a round, conical calyx cut into five blunt lobes; the corolla is split irregularly into five segments which form an upper and a lower lip, the upper upright and the lower turned down. The five stamens have their anthers united to form a tube around the style, from which, later, the style emerges and spreads its two broad stigmas. The fruit is a club-shaped capsule, opening by two or three valves.

ACRID LOBELIA (*L. urens*), found only in Devon and Cornwall, growing not in water, but on moist heaths. Perennial. Flowers August and September. Radical leaves, oval or oblong, toothed slightly; those of the stem more lance-shaped, with coarsely toothed edges. The slender stem is angular, the ridges rough, one to two feet. The flowers, which are nearly of the same size as those of the Water Lobelia, are in loose, erect sprays, and blue or purple; they are erect or spreading instead of drooping.

The genus was named by Linnaeus after Matthew Lobel, a Flemish botanist and physician of the sixteenth century.

### Sheep's-bit Scabious (*Jasione montana*) Plate 42

Although very different in colour, the flower-heads of Sheep's-bit are very liable to be passed by as pale forms of the Devil's-bit Scabious (*Scabiosa succisa*). Their habitats are very different, and there is no relationship, but they produce blue heads of flowers of similar size. Popularly both Sheep's-bit and Devil's-bit are mistaken for Composite flowers, whereas the first is one





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In all its beauty; but too frequently one finds that the hedger's hook has lopped off the panicle and left only the lower part of the plant. The Nettle-leaved Bell-flower appears to be the real original Canterbury Bell, but in modern times the gardener has bestowed the name upon an allied species of alien origin. Throatwort is another old English name for it.

*Perennial: Flowers August to October.*—Rootstock, stout, short, from which arise large heart-shaped leaves on long stalks, coarsely toothed, and bristly. Stem-leaves become less heart-shaped, more slender, and shortly stalked the farther they are from the roots. Stem, three or four feet long, angled and bristly, the upper half bearing many small racemes of more or less erect blue-purple bells, which are three-quarters of an inch across. The upper bud in each raceme opens first, the others in succession; by this plan the entire panicle is kept well covered with open flowers until the end.

**GIANT BELL-FLOWER** (*C. latifolia*). Flowers July and August. Much like Nettle-leaved Bell-flower, but with stouter furrowed and downy stem. Root-leaves, stalked, triangular-heart-shaped and hairy. Stem-leaves, without stalks, broadly-oval, bluntly-toothed. The large blue (or white) flowers are here in a single raceme (not a panicle of racemes), each branch supporting one flower only, and the raceme is more leafy.

**CLUSTERED BELL-FLOWER** (*C. glomerata*) is a downy plant less than two feet high, with a rounded, leafy, slender stem. Root-leaves, heart-shaped on long stalks. Stem-leaves, stalkless, clasping the stems. The purple-blue flowers are erect, mostly crowded in a terminal head. Flowers on dry soils, chiefly chalk, July to October.

The Latin *campanula*, a bell.

### Harebell (*Campanula rotundifolia*) Plate 43

This is the true Blue-bell of Scotland, but the Blue-bell of the Southron is the Wild Hyacinth. Controversy has arisen over its name—should it be spelled Hairbell or Harebell?—does its name refer to the slender hair-like stems, or to its habit of growing where hares delight to revel? According to Latham, it should not be spelled Hair- or Hare-, but Ha'erbell, for it is a contraction of Heatherbell. It is abundant everywhere on heaths and pastures. There are seven species of *Campanula* included in the British flora, of which three are rare. The characteristic of them all is a beautiful bell-shaped corolla with five lobes, five stamens, and the style with three to five stigmas.

*Perennial: Flowers July to September.*—Rootstock, creeping. Stems, several slender, angled. The first-formed leaves, near the ground, are more or less rotund (heart-shaped, or kidney-shaped) and stalked, but as they occur higher up the stem they are more and more slender. Flowers, blue, nodding or drooping.

RAMPION (*C. rapunculus*). Perennial. Flowers July and August. Root, turnip-shaped; edible. Stem, rough, angular, three feet high. Lower leaves, broad, lance-shaped, stalked; upper ones much narrower. The small pale blue flowers are grouped in a loose panicle, and are more or less erect; the divisions of the calyx awl-shaped. Found on sandy soil from Fifeshire southwards.

SPREADING BELL-FLOWER (*C. patula*). Biennial, or perennial. Flowers July and August. Stem, two feet high. Radical leaves, oblong, stalked. Stem-leaves, narrow, lance-shaped. Flowers, few, paniced, on long stalks, erect; the lobes of the corolla widely spread, so that it is funnel-shaped rather than bell-shaped, and it is more purple than blue. Found in hedges and thickets not farther north than Yorkshire.

### Ivy-leaved Bellflower (*Wahlenbergia hederacea*) Plate 43

This delicate plant was at one time included in the genus *Campanula*, but its seed capsule is of rounder form than that of any true bell-flower, and instead of opening below the calyx, this opens within the calyx. This is the character upon which it has been separated from the genus *Campanula*.

Although one of the beauties of bogland it is not confined to bogs, as it may be found among grass in the wetter parts of woods where there is peaty soil. It is found in England as far north as Yorkshire, and in the West of Scotland. Wahlenberg (1780–1851), whose name was adapted for this genus, was Professor of Botany in the University of Upsala, and the author of several important botanical works.

*Perennial: Flowers July and August.*—Rootstock, creeping. Stems, trailing, mere threads. Leaves, five-pointed, pale green, slightly exceeding half an inch at their fullest development. Leaf-stalk, rather long, thicker at its junction with the leaf than at its lower extremity. Flowers, solitary, borne high and erectly above the leaves on long footstalks, and starting off from the stem opposite to a leaf. There is a top-shaped calyx with five triangular lobes, which do not turn outwards but clasp the base of the tubular corolla. This is of a delicate pale blue tint,



and its length (half an inch) is just twice its width at the mouth, which has five blunt-pointed lobes that turn slightly outwards.

### Venus's Looking-glass (*Legousia hybrida*) Plate 43

This is one of the numerous annual weeds that are to be found only in cornfields or other tilled land. It is known also as Corn Violet and Corn Bellflower, not because its flowers are bell-shaped, but because it was formerly known as *Campanula hybrida*. It is found on dry soils chiefly in the Eastern Counties, as far north as Durham.

*Annual: Flowers June to September.*—Stem, branched from the base or entirely unbranched, angled, and rough with minute hairs, four inches to a foot high. Leaves, wavy oblong, slightly toothed: those from the roots with stalks, those from the stem without. The flower—usually solitary, at the end of the stem or branch—is singular in the length of the angular calyx tube, enclosing the ovary; its lobes are somewhat leafy, longer than those of the wheel-shaped corolla, which are lilac on the outside and blue within. Fruit, angular capsules an inch or more long.

### The Heath Family (*Ericaceae*) Plates 44-45

**CHARACTERS.**—Trees, shrubs, or herbs, mostly evergreen shrubs. Leaves undivided, without stipules. Flowers regular, or but slightly irregular. Calyx-four or five-parted. Corolla bell-shaped, with four or five teeth or lobes; occasionally with distinct petals. Stamens four to ten, the anthers opening by terminal pores or slits. Ovary four- or five-celled with terminal style and simple or lobed stigma. Fruit, a berry, or three- to five-valved capsule, with three to five cells.

### Whortleberry (*Vaccinium myrtillus*) Plate 44

The Whortleberry, Blaeberry, Bilberry, or Blackheart grows as abundantly and as thickly as heather on some of our hills. It forms a splendid cover for small creatures, growing to a height of about two feet, sometimes higher.

*Shrub: Flowers April to June.*—Rootstock creeping. Stems, angular, smooth. Leaves, leathery, oval, alternate. The young leaves have a beautiful rosy tint, which is soon exchanged for a dark green, but they get the rosiness back again when autumn touches them. Flowers, rosy and pitcher-shaped (*urceolate*), the short neck and mouth of the pitcher being formed by the four or five turned-out lobes of the corolla. Fruit, a succulent blue-black berry, with a fine glaucous bloom upon it.

There are three other British species :

**BOG WHORTLEBERRY** (*V. uliginosum*). Found in mountain bogs and copses not south of Westmorland and Durham. Differs from *V. myrtillus* in the possession of *round*, woody stems, not erect ; leaves *not* toothed, glaucous beneath ; flowers in clusters of two or three ; berry smaller. Flowers May and June.

**COWBERRY** (*V. vitis-idaea*), with *downy* stems, evergreen leaves dotted beneath, edges curled back ; flowers in crowded, open racemes ; anthers without awns. Berry red, and of acid flavour. Not found in South-East England. Flowers pink, June and July.

**CRANBERRY** (*V. oxycoccus*). Creeping amongst *Sphagnum* in peat-bogs. Only a few inches in height. Leaves evergreen, with edges curled back, glaucous beneath. Corolla split into four narrow segments and rolled back, the yellow anthers protruding. Flowers rosy, June to August ; berries red.

Name uncertain ; but probably corruption of *baccinium*, from Latin, *bacca*, a berry.

### Marsh Andromeda (*Andromeda polifolia*) Plate 44

A diminutive evergreen shrub, known also as Wild Rosemary and Polymountain. It is found in peat-bogs in Central and Northern England and Southern Scotland.

*Shrub, one foot : Flowers May to August.* Stem, slender, woody, at first leans upon the ground, sending out roots, then ascends ; it has smooth brown bark, and half-erect twiggy branches. Leaves, alternate, glossy, evergreen, slender, lance-shaped, but their form is disguised somewhat by their margins being rolled back. Flowers, drooping, rosy, in small clusters at the ends of the branches. They have red, slender stalks, and consist of four small, blunt sepals and a globular corolla of one piece with five turned-out lobes at the mouth. Within there are ten stamens with two-awned anthers surrounding the simple style. The fruit is not a berry, but a dry, erect, somewhat globular capsule, opening by five valves to release the numerous seeds, which are oval, hard and smooth.

### Cross-leaved Heath (*Erica tetralix*) Plate 44

The Cross-leaved Heath, though more widely distributed, is not so well known as the common Purple Heath (*E. cinerea*) of our elevated moorlands and commons, for the latter is found in much greater communities. The Cross-leaved species may



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Pl. 45.

1. Small-flowered Winter-green (*Pyrola minor*), p. 198. 2. Yellow Bird's-nest (*Monotropa hypopithys*), p. 199.

3. Water Violet (*Hottonia palustris*), p. 200. 4. Primrose (*Primula vulgaris*), p. 201.





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be known at a glance by its larger, pale-rose coloured, drooping flowers, which pale almost to white on their under-sides. It is important to note as a further mark for identification that the leaves are arranged round the stem in whorls of *four*. It is found in damp hollows and boggy spots, on the heath, and in the moister parts of pine-woods.

*Shrub*, one half to one and a half feet : *Flowers July to September*.—Stems, erect, branched, downy. Leaves in whorls of four round stem, margins turned under and fringed with fine hairs. Flowers, drooping, clustered in a dense head at the summit of the stem. Each flower is egg-shaped, the corolla all in one piece, with four small lobes to its mouth. Stamens, eight, the anthers pressed into a compact ring.

**FINE-LEAVED OR PURPLE HEATH** (*E. cinerea*). Distinguished from the foregoing species by its more slender reddish-purple flowers, and its smooth stems and leaves; the latter exceedingly narrow, their edges curled under, and arranged around the stems in whorls of *three* leaves, with clusters of minute leaves in their axils. The flowers also are in whorls, and either horizontal or drooping. The sepals are four in number, green; the corolla in one, egg-shaped, with four short lobes around the mouth. The stamens are eight, arranged much as in *E. tetralix*. Flowers July to September, and is the most characteristic plant of the moorlands in early autumn, tracts of many acres being continuously covered by it.

**FRINGED HEATH** (*E. ciliaris*) is a downy shrub with many branches, and small oval leaves, arranged in whorls of three or four. The crimson flowers are egg-shaped, with a small one-sided mouth through which the style is protruded. The downy sepals have fringed margins. Flowers June to September; but is restricted to sandy heaths in Cornwall and Dorset.

**CORNISH HEATH** (*E. vagans*) is a smooth plant with stout stems as much as three feet high, the erect branches densely covered with narrow leaves in whorls of three or four. The flowers do not droop as in most of the species, but grow erect in racemes. The pink corollas are not egg-shaped as in the others, but bell-shaped with an open mouth, through which hang the stamens and pistil. Flowers July and August. It occurs only in West Cornwall, and may be found on the heaths and downs near the Lizard.

The name *Erica* is the ancient Greek *Ereikh*, signifying heath or heather.

**Heather or Ling** (*Calluna vulgaris*) Plate 44

The Ling is distinguished from the Heaths by the botanist because its corolla is concealed by the longer, equally coloured calyx leaves, and below these are four bracts which resemble a calyx. Like the Heaths, its flowers are persistent, and are to be found bleached, but preserving much of their original form, nine or ten months after they have opened. It is found beautifying the moorlands all over Britain.

*Shrub, one to three feet: Flowers July to September.*—Stem much branched, tough, wiry. Leaves, triangular, very minute, and densely packed, overlapping each other in four rows along the branches. Flowers, pale pink or white in irregular leafy racemes. The corolla has not merely four short lobes at the mouth of the bell, but is deeply split into four parts. The anthers are short, and contained within the corolla, but the style is long, and protrudes.

From the Greek, *Kallino*, to beautify or adorn.

**Small-flowered Winter-green** (*Pyrola minor*) Plate 45

The Winter-greens—of which we have five species—are little known in the South of England, for they are mainly northern in their distribution. The species we have figured as a type of the genus, however, extends from the north of Scotland to the south of England, and is therefore most likely to be met with by our readers. They are perennial herbs, with a creeping rootstock and a short, firm stem. Their leaves mostly spring from the rootstock, evergreen, and are mainly oval with a tendency to roundness, more or less toothed, and with long stalks. They are plants of the woodland, allied to the Heaths and Whortleberry, and like them exhibiting some peculiarities in the way of stamens. There are ten of these, in five pairs, springing from beneath the ovary, and each cell of the anther opens by a pore at the tip, through which the pollen is shaken out. The pollen grains are united in fours.

The SMALL-FLOWERED WINTER-GREEN (*P. minor*) has a stem only an inch or two in length, and roundish-oval leathery leaves, which are usually arranged in rosette fashion, from whose centre rises the flower-scape to about six inches or more, bearing the small, drooping rose-tinged white flowers. These are globular in form, and consist of five sepals and five concave petals, with a globular five-celled ovary and a style ending in an expanded five-rayed stigma. There is no real nectar, but the stigma-lobes



are always moist, and visiting insects lick them. The stamens are of similar length to the style. Fruit, rounded capsules, which discharge the minute seeds by five valves. Flowers July and August.

INTERMEDIATE WINTER-GREEN (*P. media*) Similar to *P. minor*, but larger. The leaves do not greatly exceed in this species, but the flowers are twice the size, measuring half an inch across; white. The stamens are shorter than the style, and the stigma divisions are minute lobes. It occurs from Warwickshire and Worcestershire to Shetland.

ROUND-LEAVED WINTER-GREEN (*P. rotundifolia*). Similar to *P. minor*, but with longer and finer leaf-stalks, the raceme longer, and pure white flowers as large as those of *P. media*, but with the style longer than the stamens and curved downwards. The flowers, moreover, are fragrant: July to September. Found in damp woods from Warwickshire and Worcestershire to Shetland; it also occurs in East Kent.

The name of the genus is from the Latin, *pyrus*, a pear, from the foliage somewhat resembling pear-leaves.

### Yellow Bird's-nest (*Monotropa hypopithys*) Plate 45

The similarity of the popular names causes, at times, confusion between this plant and the Bird's-nest Orchis; but the resemblance is very superficial. They are alike in their mode of life, and the same beech or pine wood may yield both species, though the Orchis is in flower earlier.

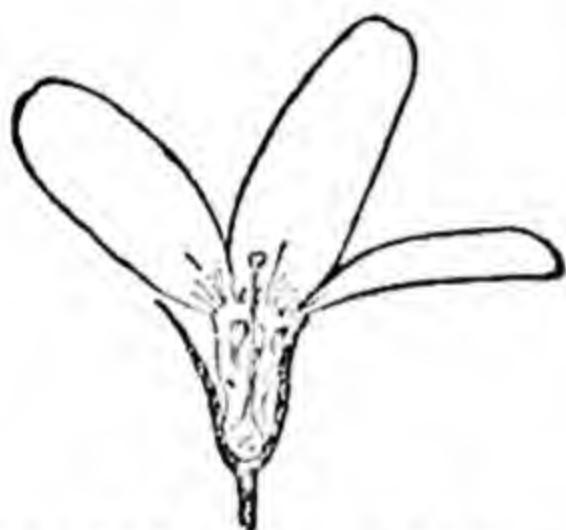
*Perennial saprophyte, feeding on decayed vegetable matter: Flowers July.* Its short, fleshy roots, immersed among decaying leaves, are coated by a web of Mycorrhiza, the benevolent fungus that enables it to utilize the products of leaf-decomposition, for the flowering plant has not the power to obtain this benefit directly from the humus. From the rootstock there arises the annual stem, thick and fleshy, clad in broad, overlapping pale yellow scales, the upper part with its spike of flowers folded down upon the lower. In July, the whole plant straightens out and the drooping, dingy yellow, fragrant flowers stand out horizontally, only the uppermost becoming erect. After fertilization, they all become erect. This upper flower of the spray differs from the others in having its parts in fives—five sepals, five petals, ten stamens, five lobes to the ovary, each lobe with two nectaries projecting from its base; the lower flowers have all these parts in fours. Above the ovary there is a short,

stout style expanding into a disk-shaped stigma. Fruit, a five-valved capsule, containing numerous small seeds.

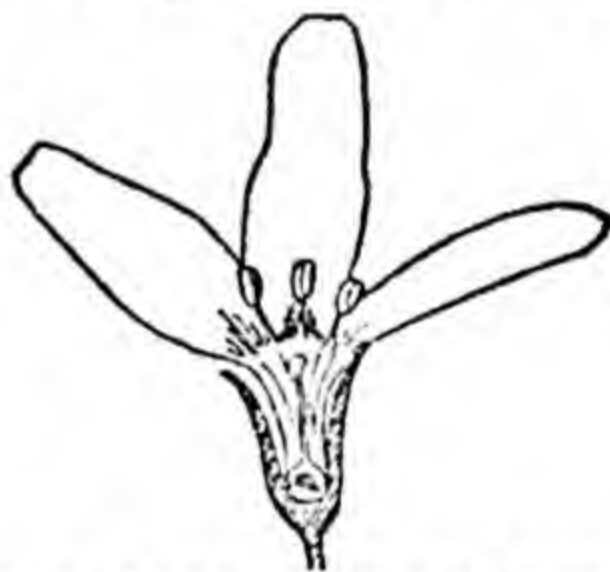
The name of the genus is Greek, and refers to the fact that the flowers all turn one way.

### The Primrose Family (*Primulaceae*) Plates 45-47

**CHARACTERS.**—Perennial (chiefly) or annual herbs. Radical or stem leaves, without stipules. Flowers regular. Calyx four- to nine-cleft (mostly five-cleft and inferior). Corolla wheel-shaped, bell-shaped, or funnel-shaped, usually five-cleft. Stamens five, attached to corolla-tube opposite the lobes, sometimes alternating with equal number of aborted stamens (*staminodes*). Ovary one-celled, with simple style and undivided stigma. Fruit, a one-celled capsule. In *Primula* and



Water Violet: Long-styled form.



Water Violet: Short-styled form.

*Hottonia* the flowers are dimorphic—that is, of two forms borne on separate plants. In the first form the style is very long, so that the stigma comes to the top of the tube; in the second the style is short and the stigma reaches half-way up only. In *Primula* and *Lysimachia* the seed capsule opens at the top, in *Anagallis* it splits around its circumference, but in *Hottonia* the same form of vessel splits into five segments, which are connected only at top and base.

### **Water Violet (*Hottonia palustris*)** **Plate 45**

Found in ponds and ditches in Central and Eastern England, not north of Durham nor south of Surrey and Somerset.

*Perennial aquatic herb: Flowers May and June.*—Roots, long, silvery-looking, sometimes imbedded in the mud, sometimes suspended half-way in the water. The branches bear dense tufts of light feathery leaves, which are all submerged. The flower-stem is from one to two feet in length, standing well above



the water, and bearing the honeyed flowers in whorls well apart. Each flower is on its own footstalk, which stands in the axil of a slender bract; and consists of a five-parted calyx, a white or lilac corolla of salver-shape, cut into five long lobes, and with a yellow centre. The stamens and pistil are similar to those of the Primrose, and, like that plant, this bears flowers of two forms. (See page 200.)

The genus was named in honour of Pierre Hotton, Professor of Botany at Leyden, who died in 1709.

### Primrose (*Primula vulgaris*) Plate 45

One of the most abundant flowers of the spring, found in hedge-banks and in woods throughout Britain.

*Perennial: Flowers April and May.*—Rootstock, thick, fleshy, underground, from which spring the tuft of soft wrinkled leaves and the crowd of flower-buds at their heart. On the underside the leaf is covered by a network of stout veins, and is softly hairy. The flowers are on long slender footstalks of a pinkish hue, all springing from one common stout flower-stem, which is so short as to be hidden among the bases of the leaves. In the var. *variabilis* (the origin of the garden Polyanthus), commonly taken for the Oxlip, this flower-stalk develops to considerable length, as in the Cowslip. The flowers have an inflated, five-angled calyx, and a funnel-shaped corolla with contracted mouth and broad spreading lobes. The corolla is an inch and a half across, and of a very delicate pale tint of greenish-yellow, the mouth of the tube encircled by five triangular patches of deeper yellow. The flowers are of two forms (see p. 200).

The name of the genus is derived from the Latin, *primus*, first.

### Cowslip (*Primula veris*) Plate 46

In April and May, in clayey meadows and pastures throughout England and Ireland, the Cowslip is abundant; in Scotland rare.

*Perennial: Flowers April and May.*—Leaves, ovate, three inches long, much wrinkled, and slightly toothed. Flowers, a rich yellow hue, funnel-shaped, the five petals being joined to form a long tube. They are borne on short pedicels, a number of which spring from a long, stout, velvety stalk, three to six inches high. At the bottom of the tube is the globose ovary, surmounted by the pin-like style with the spreading stigma at



the top. The five stamens are attached to the walls of the tube, and the flowers are dimorphic (*see* p. 200).

**BARDFIELD OXLIP** (*P. elatior*). The true Oxlip. Found in copses and meadows in the Eastern Counties only. Flowers April and May. Calyx less inflated, corolla pale, like primrose, but the mouth of tube not contracted; pedicels shorter; thick stalk developed and long like cowslip.

**BIRD'S-EYE PRIMROSE** (*P. farinosa*). The two former species have *wrinkled* leaves and angular calyx-tubes; this and the next have not, but their leaves are *very* mealy underneath. Flowers, pale purple-lilac with a yellow eye, in a compact umbel; June and July. Found in bogs and meadows north of York, but rare in Scotland.

### Yellow Loosestrife (*Lysimachia vulgaris*) Plate 46

Found on river-banks and in wet, shady places, chiefly in England.

*Perennial: Flowers June to August.*—Stem, erect, downy, three or four feet high, arising from a creeping rootstock. Leaves, broad lance-shaped, with entire edges, stalkless, smooth or downy beneath, but with black glands on the upper surface; opposite on the stem, or in whorls of three or four. Flowers, yellow, growing from the axils of the upper leaves, in cymes, with slender bracts. The flower parts are in fives or sixes. The calyx-lobes are margined with red and have hairy edges. Corolla is somewhat bell-shaped, deep yellow, dotted with orange inside, and half an inch across. The stamens are united below to form a glandular tube, and the almost globose ovary, with its slender style, develops into a round capsule that splits open at the top with five teeth. The flowers are dimorphic (*see* p. 200).

**TUFTED LOOSESTRIFF** (*L. thyrsiflora*) also erect-growing, but not quite so tall as *vulgaris*. Leaves, dotted with black, opposite, rarely whorled; the lower ones small. Flowers in dense, many-flowered racemes. Corolla half the size of *vulgaris*, the lobes separated by a minute tooth. It occurs about marshy ground and on the banks of canals northward from Nottingham and Lancaster. Rare in England, more frequent in Scotland. Flowers June and July.

### Yellow Pimpernel (*Lysimachia nemorum*) Plate 46

To town-dwellers one of the most familiar of plants is the **CREEPING JENNY** (*L. nummularia*), and as Creeping Jenny and

Yellow Pimpernel (*L. nemorum*) are very closely related, it will be well to consider them together, for they are very much alike, and affect similar natural habitats. They are both perennials, found in moist, shady places in copses and thickets, and near ponds and streams. Creeping Jenny has prostrate stems about two feet in length, with opposite roundish leaves on short stalks, and with glandular dots. From the base of the leaf-stalks roots attach the stem to the soil and make the starting-point for a new plant. Flowers, yellow, cup-shaped, and produced singly from the axils of the leaves. Sepals, broad, oval pointed. Corolla, which is three-quarters of an inch broad, split into five lobes with delicately fringed edges. The filaments of the stamens are all united by their bases. Flowers June and July. Does not fruit in this country.

YELLOW PIMPERNEL OR WOODLAND LOOSESTRIPE (*L. nemorum*) has shorter, more slender stems, that recline rather than creep on the ground. Leaves, larger, more oval, running to a point, without glands, and of a more yellow green. The yellow flowers are smaller (two-thirds of an inch), of the form known as rotate, with the unfringed lobes more spread out, and on very slender, long curved stalks. The filaments of the stamens are not connected. Flowers May to July. Fruit, small globular seed-vessels, very much like those of the Scarlet Pimpernel (*Anagallis arvensis*).

### Chickweed Wintergreen (*Trientalis europaea*) Plate 46

This exceedingly pretty herb comes no farther south than Yorkshire, where it finds the necessary conditions on the mountains and moors; and is most abundant in the Highlands of Scotland.

*Annual: Flowers June and July.*—Rootstock, slender. Stem, thin, wiry, erect, four to eight inches. There is no branching and, short of the top, there are only two or three minute leaves. At the summit there is a whorl of five or six oblong-oval leaves, each leaf differing in size from its fellows. They are stiff and glossy, narrowed into a short stalk, and varying in length from one and a half to two and a half inches. The flowers—from one to four, but usually two—spring on long thread-like stalks from the centre of the leaf-cluster. The flower-parts vary from five to nine, but mostly they are seven. The calyx consists of seven very long and slender sepals, and the corolla of seven white or pink petals, connected at their bases by a fleshy yellow ring encircling the ovary and supporting the seven stamens. The



pistil consists of a globose ovary and a thread-like style with a thickened stigma. Fruit, a round capsule splitting into five valves that roll back.

### Sea Milkwort (*Glaux maritima*) Plate 47

On the low rocks that are splashed with spray at high water, we shall in all probability find considerable quantities of Sea Milkwort, or Black Saltwort, as it is alternatively named. It occurs abundantly not only on the seashore, but also in estuaries, and even in the inland salt-districts. On the Cornish coast it grows with its tough rootstock wedged between the layers of the slaty killas-rock; whilst it is equally at home in the salt-marshes.

*Perennial: Flowers May to August.*—Stem, three to five inches in height. Leaves, small, smooth, stalkless, and like so many other shore-plants, thick and fleshy. Their margins are quite even, without teeth or lobes of any sort, and they are minutely pitted all over; the upper surface much darker than the underside, but of blue-green hue. The flowers will be seen to have no petals, which distinguishes it from all other *Primulaceae*, but the calyx, which is bell-shaped, with five lobes, is coloured with a flesh tint, finely sprinkled with minute crimson dots. Fruits, globose, similar to those of the Primrose and Pimpernel.

From the Greek, *glaukos*, sea-green.

### Pimpernel (*Anagallis arvensis*) Plate 47

The Scarlet Pimpernel, or Poor Man's Weather-glass, is one of those wild flowers with which every country-dweller is acquainted, for it has long enjoyed a reputation as a cheap barometer, in consequence of its habit of closing the petals on the approach of rain. But this is only a reliable indication in the morning for it invariably closes soon after two p.m., rain or shine. There is a form often found with blue flowers, which was formerly regarded as a distinct species, but experiments with the seeds have proved it to be a mere variety. One or other of these forms is common in all fields and wastes. Plants have been found with both red and blue flowers on the same stem.

*Annual: Flowers May to November.*—Stem, square, lying along the ground and sending up many erect branches six inches to one foot. Leaves, stalkless, oval, the margins without teeth, usually borne in pairs, but occasionally in threes or fours,





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Flowers, scarlet, produced singly, on very long and slender stalks, from the axils of the leaves. The sepals are narrow, sharp-pointed, almost as long as the wheel-shaped corolla. When the flower has passed, its long stalk curves downwards with the globose seed-vessel. When this is ripe it opens by a clean fissure all round, so that the upper half falls off and discloses the numerous seeds.

*Anagallis* is the old Greek name, and is made up of *ana*, again, and *agallo*, to adorn.

### Bog Pimpernel (*Anagallis tenella*) Plate 47

Bog Pimpernel is one of the most beautiful and interesting plants of the bog and marsh, and is almost as widely distributed in these islands as the well known scarlet-flowered species.

*Perennial : Flowers July and August.*—Stem, creeping, rooting in the moist ground and Bog-moss. Leaves, pale, broad-oval, slightly stalked. Flowers, rosy, funnel-shaped, much larger than the scarlet ones of its field relation. They are mounted on long stalks, and the petals greatly exceed the calyx in length. The stamens, which are all distinct in the scarlet species, here have their filaments united below.

### Brookweed (*Samolus valerandi*) Plate 47

The Brookweed, called sometimes the Water Pimpernel, is found throughout these islands in marshy and watery places on a gravelly or sandy soil, especially near the sea. It occurs also where there are trickles of water on clay cliffs.

*Perennial : Flowers June to September.*—Stems, smooth, round—there may be as many as four or five—from three to four inches to nearly a foot in height. Leaves, radical, oval, in a rosette, almost glossy, yellowish-green, without teeth or other division; stem-leaves few and alternately placed. The small white flower consist of a hemispherical calyx with five triangular lobes; a salver-shaped corolla with five short, blunt lobes; five stamens, with short filaments attached to the corolla-tube, and a roundish ovary attached partially to the calyx. In addition, there are five stamens without anthers between the lobes of the corolla. Fruit, a globular capsule filled with rough seeds.

### The Butterwort Family (*Lentibulariaceae*) Plate 48

**CHARACTERS.**—Marsh or aquatic herbs with radical leaves, without stipules. Flowers solitary or racemed, irregular. Calyx two-lipped or five-parted. Corolla two-lipped, closed or open. Stamens two,



anthers two-valved. Ovary one-celled, with short thick style, and two-lipped stigma. Fruit, a capsule, two-valved, or bursting irregularly. The plants are insectivorous.

### Butterwort (*Pinguicula vulgaris*) Plate 48

This is another of our beautiful bog-plants; and not interesting on account of its beauty only, but for its carnivorous propensities also. In these plants the upper surface of the leaves is covered with glandular hairs, which secrete a very sticky fluid. Insects, seeds, or pollen, becoming attached by this fluid, set up an irritation of the leaf, which folds over its lateral edges slowly and secures the exciting object. The leaf then secretes an acid fluid which possesses the power of rapidly dissolving and digesting the offending substance.

*Perennial: Flowers May to July.*—Stem, none. Leaves, thick, greasy, with incurved edges in a rosette. From the centre of this cluster there are sent up several leafless, purplish stalks, from four to six inches in height, each bearing a solitary violet flower on the recurved tip. Calyx, five-lobed, the lobes unequal. Corolla, two-lipped, unequal, the upper lip having two lobes, the lower three; there is also a slender spur.

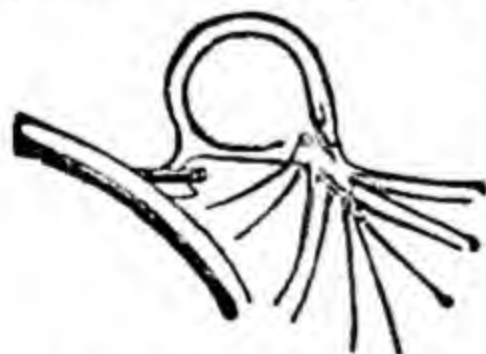
**PALE BUTTERWORT** (*P. lusitanica*), found only in the bogs of South-west England, from Cornwall to Hants; West Scotland and Ireland. A much smaller plant, with inconspicuous lilac corolla, the lips nearly equal, the spur short, broad, blunt. Leaves, thin and small. Flowers June to October.

From the Latin, *pinguis*, from the greasy texture of the leaves.

### Greater Bladderwort (*Utricularia vulgaris*) Plate 48

The Bladderworts, like the Butterworts, are insectivorous plants of boggy ground, but they are aquatics. They are not attached to the bottom of the pools and ditches where they are found, but float in the water. Interspersed with the segments of the leaves are little pitchers or bladders—in *U. vulgaris* varying from an eighth to a quarter of an inch across—of which a diagram is here given. These bladders open by an elastic door-like valve, which allows the entrance of a water-flea, then closes upon it.

Many small creatures are thus imprisoned, and when they die their decomposing remains are absorbed by the plant as food.



Bladderwort's trap.

*Aquatic perennial: Flowers July and August.*—A mass of branching, thread-like stems and very finely divided leaves grow submerged. Flowers, personate (similar to those of the Toadflax) with two lips, of which the lower is strangely termed the palate. Further resemblance to Toadflax is afforded by a spur. There are two stamens, inserted on the upper lip, and a short style with two unequal stigma-lobes, which are irritable. The corolla is about three-quarters of an inch long, yellow; the upper lip broad and short, the palate more prominent, and the spur honeyed. From two to eight blossoms are borne on a scape, which varies in length from four to eight inches.

INTERMEDIATE BLADDERWORT (*U. intermedia*). Leaves nearly round, close-set in two rows, with awl-shaped segments. Bladders an eighth to a quarter of an inch, on slender stalks from leafless branches. The stout scape bears three or four pale yellow flowers, half an inch long, whose upper lip is twice the length of the palate, spur conical, sharp. Flowers July to September.

SMALL BLADDERWORT (*U. minor*). Leaves, similar to those of last species, but smaller. Bladders a twelfth of an inch, on slender stalks from the leaf-axils. Scares two- to six-flowered. Flowers pale yellow, a third of an inch, upper lip as long as the curved palate; spur minute, blunt. Flowers June to September.

The name is from the Latin *utriculus*, a bladder.

## The Olive Family (*Oleaceae*)

Plate 48

CHARACTERS.—Shrubs and trees, branches and leaves opposite, the latter without stipules and either simple or broken up into pinnate leaflets. Flowers with four-lobed calyx and a four-parted corolla, though in Ash both are entirely lacking (see *Wayside and Woodland Trees*, page 46). Stamens, two. Ovary, two-celled, with or without a simple style. The sexes may be in one flower or separate. The ovary develops into a berry or a dry fruit.

### Privet (*Ligustrum vulgare*)

Plate 48

In thickets on the chalk-hills and on top of the cliffs of Southern England and Ireland, the Privet is a common shrub. The well-known shrub from suburban gardens, however, is another species, the *Ligustrum ovalifolium* whose home is in Japan. Common Privet shares with Ash the representation of the Olive family in this country.



*Shrub : Six to ten feet high, with smooth bark. Flowers June.*—Its straight, slender branches are given off in pairs (opposite). Leaves, glossy, opposite, lance-shaped, leathery, about two inches long, shortly stalked, of a dark green tint, and with clean-cut edges quite free from teeth. They are almost evergreens for they endure through the winter, but fall in spring when the plant renews its activity. Flowers, small white, in large pyramidal panicles at the summits of the stems and branches. Each flower consists of a cup-shaped calyx with four minute teeth at the mouth, a funnel-shaped corolla with a four-lobed spreading rim, two stamens, and an egg-shaped ovary with forked stigma. Fruit, a heavy cluster of globular, green berries, each about a third of an inch in diameter, purple-black colour. In each berry there are two or four seeds immersed in a spongy violet pulp of bitter flavour.

From the Latin, *ligo*, to bind or tie up, the pliancy of its branches making it suitable for binding faggots.

### The Periwinkle Family (*Apocynaceae*) Plate 48

CHARACTERS.—Herbs or undershrubs. Leaves opposite, entire. Flowers solitary. Calyx with four or five long-pointed lobes. Corolla salver-shaped or funnel-shaped, with oblique lobes. Stamens four or five, attached to corolla-tube. Ovary of two carpels; style short, dilated above.

#### **Lesser Periwinkle (*Vinca minor*)** **Plate 48**

The Lesser Periwinkle is perhaps more familiarly known as a garden plant than as a wild-flower, but it is now truly wild, in the Southern English counties at least, and its favourite position is a woodland bank, which it thickly covers with its dark evergreen leaves.

*Perennial : Flowers April and May.*—Stem, branching, trailing, rooting at nodes. Leaves, ovate, evergreen. Flowers, blue, solitary, on short stems. The five petals are united for half their length to form a tube, and the five free lobes are oblique: the corolla as a whole being salver-shaped. The plant rarely, if ever, produces seed in this country.

The GREATER PERIWINKLE (*V. major*) is also naturalized in places. It is much larger in every respect than *V. minor*.

From the Latin, *Vincio*, to bind or connect.



## The Gentian Family (*Gentianaceae*) Plates 49-50

**CHARACTERS.**—Herbs, annual or perennial. Leaves entire and mostly opposite, without stipules. Flowers regular, solitary or in cymes. Calyx inferior, with four to eight teeth or lobes. Corolla wheel-shaped, bell-shaped, or funnel-shaped, with four to eight lobes. Stamens four to eight, attached to corolla-tube. Ovary one- or two-celled, with simple style and divided stigma. Fruit, a two-valved capsule.

### *Gentianella (Clcendia filiformis)* Plate 49

*Gentianella* is restricted to the south and south-west parts of England and in corresponding parts of Ireland, and will be found in moist places along sandy sea-shores or in damp hollows on heaths inland. The flowers remain open only in sunshine.

*Annual: Flowers July to October.*—Stem, slender, angled, six or eight inches in length, sparingly branched, but as it has a habit of leaning partly on the ground, it is seldom more than three or four inches high. Leaves, in pairs and without stalks; those from the root narrow lance-shaped, the stem-leaves awl-shaped. The branches again branch in the upper part into two or three long flower-stalks, each supporting a single small yellow flower. This has a four-lobed, bell-shaped calyx, a salver-shaped corolla with four lobes; there are four stamens, and the pistil ends in a thick, undivided stigma. The minute, egg-shaped capsule contains many seeds.

### *Centaury (Erythraea centaurium)* Plate 49

A very neat and beautiful plant, which grows in woods and sandy or chalky pastures all over Britain.

*Annual: Flowers June to September.*—Stem, square, erect, less than a foot in height. Leaves, oblong, in pairs growing together at their bases. Flowers, funnel-shaped, pink, produced in terminal cymes.

There are several forms, more or less distinct, differing somewhat from the type.

**DWARF-BRANCHED CENTAURY** (*E. pulchella*). Shorter, usually much branched from the base; leaves broader, egg-shaped; flowers stalked, calyx almost as long as the corolla tube. Flowers July to October.

**DWARF CENTAURY** (*C. capitatum*). Stem short, simple; leaves ovate or subspathulate; flowers sessile; stamens free from base of corolla tube. Flowers July and August.

**DWARF-TUFTED CENTAURY** (*E. linarifolia*). Stem two to six inches, simple or branched; leaves narrow-oblong, ribbed; flowers stalkless in a dense terminal cluster; calyx as long as corolla tube. Flowers June to August on sandy shores.

The name is from the Greek, *Eruthros*, red, in allusion to the pink flowers.

### Felwort (*Gentiana amarella*)

Plate 49

The Gentians are all beautiful flowers, and some of the Alpine species arouse the enthusiasm of climbers in the European Alps. There are five species inhabiting these islands, of which *amarella* is the most widely distributed. It must be sought in dry pastures and on chalk downs.

*Annual: Flowers July to September.*—Stem, four inches to a foot. Leaves, radical, spoon-shaped; stem-leaves lance-shaped and opposite. The stem branches above and bears the numerous pale purple flowers in panicles. Individually the flowers have the sepals united into a five-lobed calyx, the petals similarly joined in a five-lobed corolla; there are five stamens and a two-lobed stigma. Within the throat of the corolla there is a fringe of hairs. There is an early flowering variety (var. *praecox*), with the flower parts in fours and the calyx-lobes unequal. The closely allied species *germanica* is a larger and stouter form, with larger flowers.

Other British species are:

**FIELD GENTIAN** (*G. campestre*). Annual, similar to *amarella*, but flower parts in fours, calyx more deeply divided, the lobes very unequal, the two broader overlapping the much narrower inner ones. Corolla one inch, pale lilac, occasionally white. Flowers July to October in moist pastures; more frequent in the north.

**MARSH GENTIAN** (*G. pneumonanthe*). Perennial, one to two feet, stems slender, branched but slightly. Calyx with two bracts; lobes five, equal. Corolla one and a half inches, trumpet-shaped, bright dark blue within, dull blue with green stripes on outside, no hairs in throat. Flowers August and September on moist heaths.

**SPRING GENTIAN** (*G. verna*). Perennial, two inches, root-leaves forming rosettes, stems in tufts, each terminated by a solitary, bright blue, salver-shaped flower, one inch across. Flowers May and June, on wet limestone rocks in North England and North-west Ireland.

The genus name *Gentiana* is Latin, and is the same as was used by the ancients for these plants.



**Yellow-wort** (*Blackstonia perfoliata*) Plate 49

In some places the Yellow-wort is the Yellow Centaury, and, in truth, it has something of the primness of its relation, the Centaury (*Erythraea*). It is a smooth plant that grows upon downs, heaths and banks, on chalk and clay, south of Westmorland and Durham, and in some places is very abundant. With the exception of the delicately tinted yellow flowers, the whole plant is of the peculiar glaucous hue. The flowers remain open only in sunshine.

*Annual: Flowers June to September.*—Stem, erect, round, two inches to a foot high. Radical leaves, spoon-shaped, in a rosette round the base of the stem; stem-leaves in pairs with their bases joined, so that they completely surround the stem, and make it difficult for crawling insects to climb the smooth stems to reach the flowers. Its flower-parts very readily distinguish Yellow-wort from the other genera of *Gentianaceae*, as they are in eights (sometimes six). The calyx consists of eight slender, lance-shaped sepals, with awl-shaped points; the corolla is rotate, consisting of a short broad tube, with eight bright yellow lobes. The ovary, with its style and cloven stigma, is bottle-shaped as a whole, but after fertilization the style drops off.

The genus name, *Blackstonia*, bestowed upon the plant by Hudson, the English botanist.

**Buckbean** (*Menyanthes trifoliata*) Plate 50

The Buckbean, Beckbean, Bogbean or Marsh Trefoil, is another of the very beautiful plants that must be sought in boggy ground. It is best appreciated when one alights upon a lone-some, bog-fringed tarn in a wooded valley, and finds the Buckbean rootstocks forming a matted raft stretching half across the tarn, their smooth trefoils shining, and setting off the pure whiteness of hundreds of flower-spikes. Such a sight will not readily be forgotten by the flower-lover.

*Aquatic herb: Perennial.* Rootstock, thick, creeping, from which the leaves are given off alternately, the broad bases of their stalks clasping the rootstock. Each leaf is broken up into three smooth, oval leaflets. The flower-spike bears a number (three to twelve) of beautiful blossoms, with five-parted calyx, and a funnel-shaped corolla with five lobes which are curved outwardly. Externally the corolla is pinkish, but within it is pure white, covered with white fleshy filaments. The five



stamens are attached to the corolla-tube, and are very distinct on account of their reddish colour. There are long-styled and short-styled forms of the flower, as in *Primulaceae* (p. 200).

Probably from the Greek, *minuanthes*, flowering a short time.

## Round-leaved Buckbean

(*Limnanthemum peltatum*)

Plate 50

This beautiful aquatic is found in the ponds and still waters of the Eastern Counties, Oxford and Sussex.

*Aquatic herb : Perennial. Flowers July and August.*—Root-stock, creeping. Leaves, roundish, heart-shaped, lie upon the surface of the water; those from the root having very long slender stalks, but those which buoy up the flowers have much shorter and stouter stalks, which form sheaths for the umbel. These leaves are quite smooth, spotted with purple above, and purplish on the under-surface. The flower-stalks vary from an inch to three inches in length, each supporting a single bright yellow blossom. Calyx, divided into five slender segments. Corolla, funnel-shape; technically rotate or wheel shaped, the upper portion being widely spread. This part is also divided into five portions, so that at first sight, like the primrose, it appears to consist of five separate petals. At the mouth of the tube each segment bears a fringed scale. There are five stamens and a single pistil, ending in a two-lobed stigma. The flowers open in succession, only one being expanded at a time. The buds remain under water until the turn of one comes to open; then that one emerges, opening on the way. When pollination has been effected, and the corolla is fading, the flower-stalk curves and brings the essential organs under water again, where the ovary develops into the flagon-shaped fruit, and the winged seeds are ripened. The fruit then opens, and the seeds rise to the surface.

The generic name is derived from the Greek, *limne*, a pool, and *anthos*, a flower.

## The Bindweed Family (*Convolvulaceae*) Plate 50

**CHARACTERS.**—Herbs, usually twining, often with milky juice. Leaves, alternate or absent, without stipules. Flowers variously clustered, or solitary. Sepals, four or five. Corolla, regular, tubular, bell-shaped or funnel-shaped. Stamens, five, attached to corolla-tube; anthers arrow-shaped. Ovary, two- to four-celled, with slender style, stigmas, two to four. Fruit, a two- to four-valved capsule.



1



2



3



4

Pl. 49.

1. Gentianella (*Cicendia filiformis*), p. 209.

2. Centaury (*Erythraea centaurium*), p. 209.

3. Felwort (*Gentiana amarella*), p. 210.

4. Yellow-wort (*Blackstonia perfoliata*), p. 211.





## Field Bindweed (*Convolvulus arvensis*) Plate 50

Its grace of form and colour makes the delicately fragrant Bindweed a general favourite, but it resents being plucked, and closes its pink cups almost immediately. It also closes them in wet weather, and at night, that its honey may not be reduced in quality.

*Perennial*: Flowers June to September.—The rootstock creeps and branches for many feet underground, taking possession of much soil. Stems, numerous, slender, twining. Leaves, spear-shaped. Flowers, pink, funnel-shaped, honeyed and scented, and much frequented by long-tongued insects. Sepals, five. Petals, entirely united to form a funnel-shaped corolla; though the five folds and lobes indicate the origin of the funnel. Fruit, capsule divided into two cells.

HOODED BINDWEED (*C. sepium*) is one of the most distinguished of our wild flowers, with large, pure white flowers. In general form it is like *C. arvensis*, but very much larger, climbing up the thickets to a height of six or seven feet. In addition to the calyx this species has an enveloping pair of large, inflated, heart-shaped bracts—the "hood"—which entirely conceal the calyx. It does not close its flowers in the rain, nor on moonlight nights, though it does so on dark nights. Sometimes the flowers are tinged or streaked with pink. Flowers June to August.

SEASIDE CONVULVULUS (*C. soldanella*) does not twine, or but rarely. It has a long creeping rhizome, slender stems, and fleshy, kidney-shaped leaves. Its large rosy flowers are not numerous. There are two bracts, as in *C. sepium*, but they are smaller than the unequal sepals. Flowers June to August on sandy shores.

From the Latin, *convolvere*, to entwine.

## Lesser Dodder (*Cuscuta epithymum*) Plate 50

There are at least two Didders indigenous to this country, and we have the misfortune to have introduced a third with flaxseed from abroad. The Lesser Dodder is usually found clinging in a tangle round the stems of furze and small shrubs, such as thyme and heather. This close embrace is sinister in character, for, as may be guessed from the entire absence of leaves and green-colouring matter, the plant is a parasite.

*Parasitic herb. Annual*: Flowers July to September.—Stem, a mere thread of a crimson hue. Flowers, very small, in bunches

of red and white blossoms—that is to say, the calyx is red, the corolla white. Calyx, four- or five-parted. Corolla, persistent pitcher-shaped, with a corresponding number of lobes, and stamens to match. The two styles protrude from the mouth of the corolla.

GREATER DODDER (*C. europaea*), with stouter branching stems varying from red to yellow in colour. Flowers yellowish, and the styles do not protrude. This species is not found north of Yorkshire, and is everywhere rare. Parasitic on nettles and hedges. Flowers August and September.

FLAX DODDER (*C. epilinum*) is the alien referred to as introduced from the Continent, and seriously injuring Flax crops. Stems pale green, and but slightly branched. Flowers pink in small clusters.

### The Borage Family (*Boraginaceae*)      Plates 51–52

CHARACTERS.—Herbs, usually rough or hairy. Stems round. Leaves alternate and entire, without stipules. Flowers in cymes. Calyx with five parts or lobes. Corolla wheel-shaped, tubular, bell-shaped, or salver-shaped. Stamens five, attached to the corolla. Ovary of two two-celled carpels, with simple style. Fruit of four nutlets.

#### Viper's Bugloss (*Echium vulgare*)      Plate 51

A very stately plant is the Viper's Bugloss, and perhaps prettiest when only one or two flowers are open on each syme—as illustrated by our artist. The recurved cymes are then very short, and the unopened flowers packed closely together. After flowering, the cymes lengthen, and the aspect of the plant changes. It is common on gravelly and chalky soils, and rich in honey, so that it is much frequented of sweet-tongued insects.

*Annual or biennial: Flowers June to August.*—Stem, three feet high. Leaves, strap-shaped, narrowed to the base, long and rough with stiff hairs, as indeed is all the plant. Flowers, a long terminal panicle of red and blue in short cymes. The unopened corollas are purplish-red, when opened bright blue. The parts of the flower are in fives; calyx five-parted, tubular corolla with five-lobed "limb," as the free portion is called, stamens five, stigma two-lobed. The lobes of the corolla are unequal, and one of the stamens is shorter than the other four, which protrude from the corolla considerably; in fact, they serve as a platform upon which insects alight.

PLANTAIN-LEAVED VIPER'S BUGLOSS (*E. plantagineum*) is a rare species, found in Cornwall and Jersey. It has a branching



stem, and larger flowers of a dark blue-purple colour, in long, spreading cymes.

From the Greek, *bous*, an ox, and *glossa*, a tongue, from its leaves being rough.

### Gromwell (*Lithospermum purpureo-caeruleum*) Plate 51

There are three species of Gromwell. The one illustrated with blue-purple flowers is the only one with coloured blossoms, but is rare, being found only on the chalk and limestone soils of the south from Devon to Kent, and in Wales. The two more common species have yellowish flowers.

*Perennial: Flowers June and July.*—Rootstock, creeping, woody. Stems, creeping, about one foot in length; these do not produce flowers. Flowering stems, about twice the length of the barren ones, and erect. Leaves, slender, lance-shaped, scarcely stalked, covered with soft bristles which have a bulbous base and lie close to the leaf-surface. Flowers, in few-flowered cymes with large leafy bracts, and very short stalks. Corolla, salver shaped, bright blue-purple, with five lobes and five downy folds at the mouth of the tube, three-quarters of an inch across. Fruit, one or two hard white nutlets, of almost globular form.

**COMMON GROMWELL** (*L. officinale*). Perennial. Flowers June and July. Rootstock stout, woody, whitish, from which arise several erect, branching, rough stems, to a height of two or three feet. Leaves, stalkless and partially clasping the stem, narrow-lance-shaped, downy above, and covered with tuberculous bristles beneath. Flowers, only one-third of the diameter of those of the Purple Gromwell, greenish-yellow, with a crown of scales in the throat of the corolla. Fruit, two or three polished grey nutlets broader at their base. There are no barren stems in this species, which extends north as far as Ross-shire, and also occurs in Ireland, in copses and hedgerows.

**CORN GROMWELL** (*L. arvense*). Annual. Flowers May and June. Root bright red. Stem, solitary bristly, growing erect (though not straight), and branched. Root-leaves broad-lance-shaped, stalked, bristly on both sides. Stem-leaves narrow-oblong, stalkless, half clasping the stem. Flowers same size as Common Gromwell, but creamy-white, with folds in the throat as in the purple species. Fruit, three or four nutlets, pale brown, polished and pitted, narrowed upwards. Distribution similar to that of Common Gromwell, but in cornfields and wastes.

The name of the genus is compounded of the Greek words *lithos*, stone, and *sperma*, seed, in allusion to the hard fruits.



**Forget-me-not (*Myosotis palustris*)** Plate 51

This plant was known as Water Mouse-ear Scorpion-Grass and classified as *M. scorpioides*, and it was not until the last century that the name of Forget-me-not was transferred to it from the Speedwell. It is now, however, very familiar as the Forget-me-not. It grows beside or in streams and other wet places, often forming "beds."

*Perennial*: *Flowers May to July*.—Rootstock, creeping, from which runners are given off. Stem, stout, smooth, hairy. Leaves, slender, spoon-shaped, smooth and light green; those from the root stalked, those on the stem stalkless. Flowers, grouped in cymes, which are at first very short, but as the buds open in succession the stalk lengthens and curves in a manner that has suggested the curl in a scorpion's tail. Calyx, bell-shaped with five teeth. Corolla, light blue, yellow round the mouth, salver-shaped, the limb divided into five lobes, and the mouth of the tube partly closed by five notched scales. The five stamens and the short style are hidden in the tube. These particulars respecting the flowers are common to all the species.

**TUFTED FORGET-ME-NOT** (*M. caespitosa*) is similar to the last, but the rootstock sends forth no runners, and the stems are branched from the base. The flowers are only a sixth of an inch in diameter. It grows in similar situations, and flowers from May to August.

**FIELD MOUSE-EAR SCORPION-GRASS** (*M. arvensis*). Annual or biennial. Flowers May to August. Found in fields, woods and wastes. In this and the following species the foliage is darker, and the calyx is covered with *hook-tipped* hairs. Stem, branched from the base, erect. Corolla, which is rather concave, only a sixth of an inch in diameter, rather pale blue, with yellow ridges round the mouth, which becomes white in older flowers.

**EARLY FIELD SCORPION-GRASS** (*M. collina*). The little annual that one finds in spring on dry banks and old walls, with *bright* blue flowers an eighth of an inch across; April and May.

**YELLOW-AND-BLUE SCORPION-GRASS** (*M. versicolor*). Similar to the last, but flowers at first pale yellow or white, then changing to *dull* blue; May and June.

From the Greek, *mus*, mouse, and *ous*, ear, from the form of the leaves.

**Bugloss (*Anchusa arvensis*)** Plate 51

The Common Bugloss must not be confounded with the Viper's Bugloss (*Echium*). The plants will never be confounded when

once seen. Bugloss is an exceedingly bristly—one might almost say prickly—plant, frequent about cultivated fields, upon a light soil. It is separated by some botanists as a separate genus, *Lycopsis*.

*Annual: Flowers June and July.*—Stems, rough, one foot, rising from a tap-root. Root-leaves, stalked, lance-shaped and thickly covered with sharp bristles, as, indeed, is the case with the whole of the plant with the exception of the corolla alone. Each bristle arises from a scaly tuberos base. Stem-leaves, stalkless, oblong and narrow, partially clasping the stem. Flowers, in cymes with leafy bracts, almost stalkless. Calyx, five-parted. Corolla, tubular, *distinctly curved*, with five spreading lobes, a quarter of an inch in diameter, and of a brilliant blue colour. The mouth of the tube is closed by five convex, white, hairy scales, one at the base of each lobe. Stamens, five, attached to the tube lower down. Ovary, four-celled, at the bottom of the tube. Fruit, nutlets.

COMMON ALKANET (*A. officinalis*), with softer bristles, and stout biennial root. Leaves, narrow lance-shaped. Stem, one to two feet. *Corolla tube straight*. Corolla, deep purple, a third of an inch across, with white scales. Flowers April to June. Rare.

EVERGREEN ALKANET (*A. sempervirens*). Perennial. With broad oval leaves, those of the stems with short stalks, those from the root with long stalks. Flowers, on short foot-stalks, bright blue, two-thirds of an inch across, scales white, tube straight. May and June. Rare, but more widely distributed than *officinalis*.

### Common Comfrey (*Symphytum officinale*) Plate 52

Found by the river-bank or brook-side. The colour of its flowers varies from pale yellow to red and purple.

*Perennial: Flowers May and June.*—Rootstock, branched. Stem, erect, angular, two to three feet high. Lower leaves stalked; upper leaves all but stalkless, their bases running down the stem in such a manner as to give it a winged character. The whole plant is rough with bristles. Flowers, one-sided spikes, drooping.

TUBEROUS COMFREY (*S. tuberosum*), is usually found in wet copses, but not south of Bedford. It is smaller, and not nearly so rough, as its congener, although distinctly hairy. The root-stock is thicker, and the radical leaves have longer stalks than



in *S. officinale*. The stem-leaves do not run far down the stem, Flowers are smaller, pale yellow; June and July.

The name is derived from the Greek *sumphuo*, to unite, it having great reputation formerly as a woundwort.

### Borage (*Borago officinalis*)

This is well known as a garden plant, and may be frequently found growing wild in waste places near habitations. It is not considered a native. Like Bugloss, it is covered with tuberous-based bristles.

*Annual or biennial: Flowers June and July.*—Lower leaves are oval-lance-shaped, stalked; the upper narrower, stalkless, but narrowed to the base where there are ears. Flowers, bright blue, wheel-shaped, three-quarters of an inch across, grouped in few-flowered cymes. The purple-black anthers, protruding far from the corolla, afford an effective contrast to the blue of the corolla.

### Hound's-tongue (*Cynoglossum officinale*) Plate 52

Where the Viper's Bugloss is plentiful, the Common Hound's-tongue may be looked for, as the two plants grow in similar situations and sometimes in close proximity. It is a hairy plant, though the hairs are soft and downy, and give a grey effect to the whole plant. It gives out a mousy odour.

*Biennial: Flowers June and July.*—Root, fleshy tapering. Stem, stout, erect, two to three feet high. Root-leaves, nearly a foot long, stalked, and of an oblong or broad lance-shape. Stem-leaves, lance-shaped and stalkless. Flowers, funnel-shaped, half an inch across, of a dull crimson colour, in forked, lengthening cymes. When the corolla has fallen, the gaping calyx discloses four flattened nutlets, with the margin raised and thickened, and covered with short, stout, hooked spines that enable them to cling tenaciously to fur, feather or textiles.

GREEN-LEAVED HOUND'S-TONGUE (*C. montanum*) is a rougher, but much rarer plant. Flowers May to July. The upper sides of the leaves are less thickly clothed with hairs, and have a smoother, greener appearance. Other-wise the plant, though less robust, is very similar in appearance to *C. officinale*. Its flowers, however, at first red, change to blue, and the nutlets are without the thickened margin.

From the Greek, *kuon*, a dog, and *glossa*, a tongue.



## The Nightshade Family (*Solanaceae*) Plates 52-53

**CHARACTERS.**—Herbs or shrubs. Leaves alternate or opposite, without stipules. Flowers regular, solitary or in cymes. Calyx inferior, with five teeth or lobes. Corolla wheel-shaped, bell-shaped, or salver-shaped, with five lobes. Stamens five, attached to the corolla-tube, alternating with the lobes. Ovary two- or four-celled, with simple style, and simple or lobed stigma. Fruit, a berry or capsule.

### **Henbane** (*Hyoscyamus niger*) Plate 52

Henbane is found usually on roadsides and waste places near dwellings, sporadically, and there is little certainty of finding it to-day where you found it last year. For so many centuries it has been esteemed for its medicinal properties that it was grown widely in gardens; and it is highly probable that it is the descendants of these garden plants that we encounter to-day. The succession appears to be maintained chiefly in the chalk districts. The large yellow flowers are so distinctive that it is not possible to confuse them with those of any other British plant. It is a poisonous plant which should be handled with care. From its leaves the druggist obtains the valuable alkaloid Hyoscine.

*Biennial Herb : Flowers June to August.*—Stem, stout, round, branching, one to 2 feet long, bearing a scattered covering of long, soft hairs. These are developed more plentifully on the yellowish leaves, and being glandular make the whole plant sticky and invest it with an evil odour. Radical leaves, oval stalked, six to eight inches long. Stem-leaves, stalkless, oblong, cut into several angular lobes; their bases clasp the stem. Flowers, somewhat drooping, very shortly stalked, produced in the axils of the upper leaves. Calyx, oval, with five teeth. Corolla, funnel-shaped, with five broad lobes, of a dingy yellow with an almost black base, and an intricate veining of fine purple lines. Stamens, five, with purple anthers, and the pistil ends in a style with knobbed stigma. The ovary develops into a large capsule with a waist-like constriction, the fruit being almost hidden in the persistent calyx-tube. When the kidney-shaped seeds are ripe, the rounded top of the capsule splits off like a lid, with a clean line, to release them. Occasionally the purple veining of the flower is wanting.

**Bittersweet or Woody Nightshade***(Solanum dulcamara)*

Plate 52

One of the most familiar objects in the hedge is the trailing stem and variously shaped leaves of the Bittersweet or Woody Nightshade; the singular flowers or the red berries attract our attention at once.

*Perennial: Flowers June to September.*—Climber, with shrubby base. Rootstock, creeping. Stems, long trailing, with no means of climbing in the shape of tendrils, hooks, prickles, or the power of twining, but yet by leaning against the stouter hedge plants they manage to attain a height of four to five feet. Leaves, vary much, the lowest being heart-shaped, the upper more or less spear-shaped, with graduations between these forms; they are very dark green in colour, and all stalked. Calyx, five-parted. Corolla, purple, with five lobes, each having at its base two small green tubercles. The five yellow anthers have their edges united, so that they form a pyramidal tube, through which the style protrudes. The anthers discharge their pollen by terminal pores. Fruit, egg-shaped berries, that go through a series of colour-changes from green through yellow and orange to a fine red.

COMMON OR BLACK NIGHTSHADE (*S. nigrum*) is an annual with an erect stem, about two feet in height. Leaves, egg-shaped, the blade gradually narrowing to the stalk, with a waved or toothed margin. Corolla, white. Berries, rounded, usually black, but sometimes yellow or red. Flowers July to October on fields and waste places.

**Deadly Nightshade (*Atropa belladonna*)**

Plate 53

Deadly Nightshade, or Dwale, is often found in the neighbourhood of ruins and on the sites of former gardens. In such places it is probably the descendant of plants that were grown there long ago for use in that branch of "domestic medicine" which concerned itself with the mixing of potions to quiet, troublesome or superfluous friends. When it occurs on open wastes above chalk or limestone, it may be considered indigenous. The whole plant has an unpleasant smell, and is generally poisonous; but the juice of the berries is specially so. These have often proved fatal to children. Under the names of atropine and belladonna the juice is prescribed in modern medicine, chiefly for external use.



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Pl. 51.

1. Viper's Bugloss (*Echium vulgare*), p. 214. 2. Gromwell (*Lithospermum purpureo-caeruleum*), p. 215.

3. Forget-me-not (*Myosotis palustris*), p. 216. 4. Bugloss (*Anchusa arvensis*), p. 216.



RED B. (*O. rubra*). Parasitic on Thyme, chiefly along west coast of Britain, and in Ireland. Red, less than one foot high. Corolla, dull red. Stigma, pale red. Flowers June to August.

LESSER B. (*O. minor*). Very variable; on Clovers, Ivy, etc. Stem, slender, two feet, yellow-brown or purplish. Stigma, purple. Flowers June to October.

BLUE B. (*O. caerulea*). Stem, slender, one foot, purple-blue. Stigma, white. Corolla, lobes pale blue, with darker veins. Flowers June to October, on pastures near the sea in eastern and southern counties.

The name is from two Greek words, *orobus*, a vetch, and *agcheo*, to strangle.

### Toothwort (*Lathraea squamaria*) Plate 53

The Toothwort, like the Broom-rapes, is a leafless parasite that consists solely of a fleshy underground rootstock, and a flower-stem which bears, besides the pale lilac flowers, a few scales and bracts. It is quite innocent of any of the green chlorophyll, by whose aid ordinary plants are able to manufacture their body material out of the elements, and it might therefore be presumed that it is a pure parasite. It has been suggested, however, that some portion of its nutriment is obtained by trapping animalcules, which are done to death and digested by it. The useless-looking underground scales are hollowed out into a series of chambers, whose entrance is hidden under the curved end next the stem. The walls of these chambers are studded with stalked glands, from whose heads delicate filaments of protoplasm stretch out. Minute creatures in the soil enter these chambers, and it was believed that they were digested and their material used by the Toothwort for its own nourishment. Later research, however, has shown that this is not the case, and that the glands serve the purpose of efferent ducts through which the plant, being leafless, disposes of the excess of water derived from the roots of its host. The whole plant is whitish or flesh-coloured, with a tinge of purple. It is parasitic on hazel, elm, etc., and does not appear to damage the trees. It is generally distributed, and a shady bank that supports a hazel spinny or hedgerow is a suitable situation in which to look for it.

*Perennial: Flowers April and May.*—Rootstock, branched, the branches covered with thick scales; it also has rootlets which attach themselves by suckers to the rootlets of hazel, elm, etc. Stems, thick, fleshy, from eight to sixteen inches in

length, the upper half being covered with the solid-looking flowers and their bract-scales. The flowers are all on one side of the stem, and arranged in from two to four rows. Each flower is about half an inch long, and consists of a pale two-lipped calyx, and a longer purplish two-lipped corolla, with four stamens, and a protruded style. The upper lip of the corolla is arched, and the smaller lower lip is notched into three teeth. Fruit, egg-shaped capsules, which open by two valves to distribute the minute seeds.

The name of the genus is derived from the Greek word, *lathraios*, hidden, in allusion to its obscure habit.

### The Figwort Family (*Scrophulariaceae*) Plates 53-56

CHARACTERS.—Herbs. Leaves opposite or alternate, without stipules. Flowers mostly irregular, variously grouped. Calyx inferior, of five parts. Corolla four- or five-lobed, wheel-shaped, two-lipped, closed, bell-shaped, or tubular. Stamens four (occasionally two or five), attached to corolla-tube. Ovary two-celled, with simple and head-like or two-lobed stigma. Fruit, a capsule.

#### Great Mullein (*Verbascum thapsus*) Plate 53

The Common Mullein, a tall plant with a flame-like spike of golden flowers. It is found in dry wastes all over Britain. It is also known as Torch-blade.

*Biennial: Flowers June to August.* Stem, stout, erect in second year, four to five feet high, ending in flower spike, clothed with woolly hairs. Root-leaves, shaggy, very large, broadly lance-shaped, more than a foot long. Stem-leaves, smaller, with their edges continued for some distance down the stem, and are therefore *decurrent*. Flowers, five-parted, the corolla wheel-shaped, with five nearly equal lobes, one inch across, and woolly outside. Stamens, five; the two long stamens have smooth filaments, but the filaments of the shorter ones are bearded with white hairs.

Other species are:

**WHITE MULLEIN** (*V. lychnitis*). With angled stem, three feet. Radical leaves, stalked, lance-shaped, white beneath only. Flowers, small, whitish, in narrow racemes. July and August.

**HOARY MULLEIN** (*V. pulverulentum*). Mealy, with round stem and velvety leaves, three feet. Similar in habit to *lychnitis*, but radical leaves broader, stalkless. Stem-leaves, heart-shaped. Flowers, bright yellow. July. Found in Norfolk and Suffolk only.

**DARK MULLEIN** (*V. nigrum*). Perennial. Stem, angled, two



to three feet. Whole plant covered with long, woolly hairs, but not so matted as in last species. Radical leaves, stalked. Flowers, yellow, stalked, in racemes. Hairs of anther-filaments purple. Flowers June to October.

MOTH-MULLEIN (*V. blattaria*). Nearly smooth. Stem, slightly angled, slender, one to four feet. Flowers bright yellow, sometimes cream-coloured, filament hairs purple. Rare. Flowers June to October.

Name altered from the Latin, *barbascum*, from *barba*, a beard.

### Weasel-snout (*Antirrhinum orontium*) Plate 54

On old walls, such as of castle ruins and ancient buildings connected with some of our cathedrals, the familiar Snapdragon (*Antirrhinum majus*) may often be found in great luxuriance. It has, perhaps, more the appearance of being a native when it is found about chalk-pits; but it is always the descendant of escapes from the garden. We have, however, a native representative of the genus in Weasel-snout or Lesser Snapdragon, chiefly found in cornfields on sandy or gravelly soils in England; in Ireland it is very rare, and it is absent from Scotland.

*Annual: Flowers July to October.*—Stem, one to one and a half feet high, branching from the base. Leaves, slender, lance-shaped, stalkless; the lower ones in pairs, the others alternate on the branches. Flowers on a short spike at the end of the branch, solitary in the axils of the leaves.

There are five narrow sepals which are much longer than the rosy-purple corolla, but as they spread widely apart they do not hide it. The erect upper lip of the corolla presses upon the spreading lower lip, much after the manner of the larger species, hiding the four stamens and the two-lobed stigma, which are so disposed under the upper lip that they must be brushed by the back of a visiting bee. No other nectar-seeking insect is strong enough to obtain admittance. Seed-vessel, a downy two-celled capsule which, when ripe, opens by three pores with teeth.

The name of the genus is composed of two Greek words which are variously regarded as meaning against the nose and like a nose, in allusion to the form of the corolla.

### Yellow Toadflax (*Linaria vulgaris*) Plate 54

The bright yellow flowers of the Yellow Toadflax immediately remind one of the Snapdragon (*Antirrhinum*), but the flowers





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Pl. 53.

1. Deadly Nightshade (*Atropa belladonna*), p. 220. 2. Greater Broom-rape (*Orobanchae elatior*), p. 221. 3. Toothwort (*Lathraea squamaria*), p. 222. 4. Great Mullein (*Verbascum thapsus*), p. 223.

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themselves will be found to differ in having a long tail or spur to the corolla. This spur is a hollow tube in which honey is secreted to attract long-tongued bees, in order that they may fertilize the ovules. It is abundant in hedges and waste places.

*Annual: Flowers June to October.*—Rootstock, slender, creeping, branching and sending up many stems. Leaves, linear. Flowers, yellow, in a terminal panicle. Within the closed corolla there are four stamens, sometimes a fifth in a rudimentary condition, and the pistil ending in a notched stigma. There is a variety with the flowers white, except the swollen "palate," which remains orange. Occasionally one meets with the form known as *Peloria*, in which the flowers are regular, with five lobes to the lip and five spurs.

The name is from the Latin, *linum*, flax.

Other annual species are:

ROUND-LEAVED TOADFLAX, or MALE FLUELLIN (*L. spuria*), with egg-shaped or round leaves and trailing branches; hairy. Corolla yellow, with purple throat and spur greatly curved. Flowers in sandy cornfields July to October.

SHARP-POINTED TOADFLAX or FLUELLIN (*L. elatine*), with spear-shaped leaves and trailing hairy branches. Corolla yellow, upper lip purple beneath. Spur, straight. Flowers in dry, chalky, and gravelly cornfields, July to October.

SMALL TOADFLAX (*L. minor*). Downy. Leaves, narrowly oblong. Corolla but slightly larger than the calyx, purple, the lower lip white, and the palate yellow. Flowers in sandy and chalky cornfields, May to October.

### Ivy-leaved Toadflax (*Linaria cymbalaria*) Plate 54

The Ivy-leaved Toadflax will be found forming a beautiful tapestry on ruins and old walls. It is believed to be the descendants of greenhouse escapes. Other species of Toadflax have the trailing habit, but *L. cymbalaria* is the only one we have with a preference for a mural habitat.

*Perennial: Flowers July to October.*—Stems, very long and slender. Leaves, lobed in a manner that suggests certain forms of Ivy, often purple beneath, dark green above. Calyx, five-parted, and the blue-purple corolla is fashioned like that of the Yellow Toadflax. The two lips are so formed that they close the mouth of the corolla, but the so-called *palate* is coloured yellow to show an insect where to seek admittance to the honey. When the seed-capsule is nearly ripe, it turns about on its stalk and seeks a cranny in the wall, where it can disperse its seeds.



**Knotted Figwort (*Scrophularia nodosa*)** Plate 54

Found in shady places throughout Britain, the Figwort gives out a flavour that is nauseous to the human sense of smell, but to the flies and wasps by which it is fertilized, it is, no doubt, suggestive of carrion.

*Perennial: Flowers July to October.*—Rootstock, knotted, tuberous. Stem, four-angled, one to three feet high, unbranched. Leaves, opposite, pointed, egg-shaped, two to four inches long, stalked, their edges sharply toothed, and the teeth themselves edged with secondary teeth. Flowers, green or brownish, in cymes, consisting of a five-parted calyx, a corolla-tube swollen at the lower part, the mouth cut into five unequal lobes, of which the upper two are the largest, and the lowest and odd one spreads outwards. The stigmas are ripe before the anthers.

**WATER FIGWORT (*S. aquatica*)**, found by the edges of ponds, streams, and ditches, with creeping rootstock, and a stem rising to three or four feet (specimens measured in Cornwall up to ten feet high), square, with wing-like expansions at the angles. Flowers, green on the lower surface, brown on the upper side, but occasionally all white; July to September.

**BALM-LEAVED FIGWORT (*S. scorodonia*)**. Rootstock, creeping. Stem, not so evidently square as the others; two to four feet. Leaves, heart-shaped, wrinkled and downy, with rounded teeth. Corolla, dull purple. Flowers July and August in South-west England and Kerry.

The name is from *scrofula*, for which it was formerly considered an excellent remedy.

**Cornish Moneywort (*Sibthorpia europaea*)**

A perennial herb with threadlike trailing stems which may be more than a foot long. Leaves, on long stalks, roundish, kidney-shaped, edges cut into seven or nine broad lobes and sprinkled with transparent hairs. Flowers, minute, produced singly from axils of leaf-stalks, consist of a five-lobed calyx and corolla cut into five lobes, the two upper yellowish and the three lower, pink. Stamens, four, style simple, with two-lobed stigma. Seed capsule, compressed and two-valved. Flowering June to October. Somewhat rare, but in parts of Cornwall it is quite abundant. Found on the banks of streams, on the shady slope of a copse or on the face of moist rocks. Recorded also from

Sussex, Devonshire and South Wales, and in Ireland from County Kerry; but in the north of our islands it is unknown.

The name of the genus commemorates Dr. Sibthorp, Professor of Botany at Oxford at the end of the eighteenth century.

### Foxglove (*Digitalis purpurea*) Plate 55

One of the best-known flowers of the country-side and familiar for the masses of purple blossoms it presents on dry wastes and on woodland slopes throughout Britain. The leaves are very similar to those of Mullein, but that of the Foxglove, though softly downy, is thin textured compared with the thick blankety feeling of Mullein; it is also minutely wrinkled above, whilst below the network of ribs and nervures stands out in bold relief.

*Biennial or Perennial: Flowers June to September.*—Flowering stems, two to four feet high, downy. Radical leaves, stalked. Stem-leaves, alternate, gradually passing into bracts, from the axils of which the large, broadly tubular flowers droop. Corolla, usually bright purple, speckled and spotted within, but sometimes it occurs orange or yellow, more frequently white. Stamens, four, in two pairs, at first with the anther-cells horizontal, but as they ripen (the long pair first) the cells assume the perpendicular position. The stigma is not mature until the pollen has been shed. The hairs in the corolla-mouth prevent the shed pollen falling out, as well as keeping out minute honey stealers. Fertilization is effected by humble-bees.

From the Latin, *digitate*, a finger-stall or thimble, from the form of the flowers.

### Germander Speedwell (*Veronica chamaedrys*) Plate 55

The Germander Speedwell is the representative of a genus which includes seventeen native species, most of them with bright blue flowers of a particular form. It shows to greatest advantage when it grows in a mass on a sloping bank, where its racemes of intensely bright blue flowers are very attractive. One of the names for the flower is Cat's-eye, and many continue to call it Forget-me-not—a name we now give to *Myosotis palustris*.

*Perennial: Flowers May and June.*—Stems, one foot long, which at first creep and root, then ascend. Leaves, stalkless, opposite, oval, with coarsely toothed edges. Flowers, bright blue racemes, usually in pairs. The corolla is tubular for half its length, the upper portion divided into four spreading lobes, of which the upper and lower are usually longer than the lateral



pair. The two stamens are attached within the corolla-tube just below the upper lobe, and the anthers and stigma protrude beyond the mouth of the tube. Seed-vessel, a two-celled, flattened, heart-shaped capsule.

The more generally distributed other species are :

**IVY-LEAVED SPEEDWELL** (*V. hederæfolia*). Annual. Flowers April to June. Leaves, stalked, heart-shape, with five or seven large tooth-like lobes. Flowers, pale blue, solitary. Capsule, swollen, with two seeds in each cell. Found in fields and on banks.

**FIELD SPEEDWELL** (*V. agrestis*). Annual. Flowers April to September. Stems, prostrate. Leaves, coarse-toothed, stalked, oval, heart-shaped. Flowers, solitary, small, blue, the lowest petal white ; sepals, oval. Found in fields and wastes. Capsule, hairy ; about six seeds in each cell.

**BUXBAUM'S SPEEDWELL** (*V. buxbaumii*). Annual. Flowers March to September. Stems, prostrate. Leaves, coarse-toothed, oval, heart-shaped. Flowers as large as those of *V. chamaedrys*, but solitary, blue, with white centre. Capsule, sharply keeled, with about eight seeds in each cell.

**WALL SPEEDWELL** (*V. arvensis*). Annual. Flowers April to September. Stems, ascending. Leaves, heart-shaped, with rounded teeth—the lower leaves with stalks, the upper without and bract-like. Flowers, small and pale blue, with white centre, in a terminal raceme. Sepals, lance-shaped, unequal. Found in old walls and gravelly fields.

**THYME-LEAVED SPEEDWELL** (*V. serpyllifolia*). Perennial. Flowers May to July. Stems, running along and rooting in the damp ground, then growing erect for a few inches. Leaves, oval, very slightly round-toothed. Flowers, in a long slender, terminal raceme, very pale blue, with darker lines. Found on roadsides and damp ground.

**COMMON SPEEDWELL** (*V. officinalis*). Perennial. Flowers May to July. Stems, hairy, lying along the ground, but branches ascending. Leaves, more or less downy, with short stalks, oval, with a tendency to roundness, coarsely toothed. Flowers, many, in racemes, pale blue or lilac. Found on banks and in pastures. All parts of the plant about half the dimensions of *V. chamaedrys*.

**MOUNTAIN SPEEDWELL** (*V. montana*). Similar generally to *V. chamaedrys*, but leaves much larger, with long stalks, and flowers much smaller, paler, and in short racemes. Flowers June to September in moist woods and thickets.

**MARSH SPEEDWELL** (*V. scutellata*). Perennial. Flowers July





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Pl. 55.

1. Foxglove (*Digitalis purpurea*), p. 227. 2. Germander Speedwell (*Veronica chamaedrys*), p. 229. 3. Red Bartsia (*Bartsia odontites*), p. 229. 4. Eyebright (*Euphrasia officinalis*), p. 239.



and August. Stems, smooth, slender, and brittle, at first lying along the ground, then half erect. Leaves, slender, lance-shaped, stalkless, and partially clasping the stem; faintly toothed. Flowers small (quarter of an inch), in numerous racemes; pale flesh-colour with darker lines. Found in bogs, and ditches. This species sends off trailing runners from the rootstock.

**WATER SPEEDWELL** (*V. anagallis*). Perennial. Flowers July and August. Stem, thick, fleshy, erect; three feet. Leaves, broadly lance-shaped, stalkless, with distant teeth. Flowers, small, pale lilac or pale blue in long racemes. The stem is hollow, and from its base rooting runners are given off. Found in ponds, streams, etc.

**BROOKLIME** (*V. beccabunga*). Perennial. Flowers May to September. Stems, lying partly on the mud and rooting; stout and hollow, with spreading branches. Leaves, thick, smooth, oblong, stalked. Flowers, in racemes, small, bright blue, occasionally pink. Found in ditches and brooks.

## Red Bartsia (*Bartsia odontites*) Plate 55

*Bartsia*, with the remaining four genera of *Scrophulariaceae*, are parasitic upon the roots of other plants. All agree in their form of parasitism, and also in the fact that, despite their diversity of colour when fresh, they all turn black when dried and pressed. *Bartsia* is found in fields and wastes, and in general appearance does not greatly differ from the Yellow Rattle, though it lacks the prominent bladders (p. 230).

*Annual: Flowers June to August.*—Stem, erect, branching, downy; one foot. Leaves, lanceolate, toothed. Flowers in one-sided spikes. Corolla, pink, or dull purple, downy. Honey is secreted at the base of the corolla-tube. The anthers are hairy, and hang close together above the mouth of the tube; the filaments being so bent as to allow room for the passage of a bee's proboscis in its search for honey. The anthers ripen after the stigma. Capsule, oblong.

**YELLOW BARTSIA** (*B. viscosa*). Annual. Flowers June to October. Whole plant downy, with viscid hairs, including yellow corolla. Lower lip of corolla large. Found in meadows and pastures chiefly in extreme South of England and West of Ireland.

The genus was named by Linnaeus after his friend, John Bartsch, a Prussian botanist.



**Eyebright** (*Euphrasia officinalis*) Plate 55

From the close-cropped turf of our commons and meadows the bright eyes of this plant peep out through the summer. In such situations it is a very lowly herb, only an inch or so in height, but in some places, as in the pastures of the Highlands, it grows erect to a height of nearly a foot, with many opposite branches. The plant is—at least partially—a parasite, and preys upon the roots of other plants, which it robs.

*Annual : Flowers May to September.*—Leaves, ovate, opposite, without stalks, and of a dark green hue. Flowers borne near the extremities of the branches. On some plants the flowers are much larger than on others, and in the larger the stigmas ripen before the anthers; in the smaller the anthers mature before the stigmas. The tubular calyx is divided into four sharp lobes. The corolla is white, streaked with purple, except the central lobe of the lower lip, which is yellow.

This is the only native species, though there are several varietal forms.

From the Greek, *euphraino*, to gladden.

**Yellow Rattle** (*Rhinanthus crista-galli*) Plate 56

Yellow Rattle is abundant in meadows and pastures, where it is parasitical upon the roots of other plants. Its yellow flowers render it very conspicuous, and its identity is readily established by the light green inflated calyx.

*Annual : Flowers May to August.*—Stem, square. Leaves, distant, opposite, stalkless, narrow, the edges deeply toothed. Flowers in loose, leafy spike. The calyx is a bladder with flattened sides, and a four-toothed mouth. The corolla yellow, tubular, two lipped; the upper lip arched over, somewhat in the form of a knight's casque, with two blue lobes; the lower lip spread outward, with three lobes. There are four stamens, concealed within the upper lip; the anthers are blue and hairy. There are two forms of flowers: a larger on one plant, a smaller on another. In the large form (shown in our plate) the calyx is relatively smaller, and the style stands well out to take the stigmas away from the anthers. In the smaller form, the corolla tube is little larger than the calyx, and, failing insect visitors, the style curves and brings the stigmas in contact with the anthers to bring about self-fertilization.

The name is from the Greek, *Rhin*, nose, and *anthos*, flower,

in allusion to the upper lip, which, when reversed, looks like a nose.

### Lousewort (*Pedicularis sylvatica*) Plate 56

Wherever we find Lousewort growing we may be sure that the pasturage is poor, and liable to bring the flocks into bad condition, making them fit subjects for the attacks of parasites. It is parasitical upon various roots.

*Perennial: Flowers April to August.*—Stems, branching, trailing along the ground. Leaves, much divided and feathery. Flowers in loose spikes with bracts. The calyx-tube is angular, and split at the front into five lobes, of which the upper one is as it should be, but the others appear to be ambitious to become leaves. The corolla forms a long tube ending in two rosy lips, of which the lower is divided into three lobes, the upper two. This upper one is longer and compressed at the sides; within it the four stamens are hidden, two on each side. The anthers open on the inner side to discharge their pollen, and they are arranged in two pairs in such a way that the inner faces are pressed together, and the ripe pollen thus prevented from falling.

**MARSH LOUSEWORT** (*P. palustris*), an annual which grows erect to the height of one foot or more, in marshy places, branching above, but not from the base. The corolla is a duller crimson in colour, and the upper lip has three lobes as well as the lower. Flowers May to September. Parasitical upon various roots.

The name is from the Latin, *pediculus*, a louse, reflecting the vulgar designation.

### Common Cow-wheat (*Melampyrum pratense*) Plate 56

Quite a number of our common plants have been distinguished in popular nomenclature by the prefix "cow," and as a general rule it would appear to have been applied in depreciation, as in the parallel cases of "dog," "horse," and "hog," to signify coarseness or worthlessness. In the case of the Cow-wheat, our forefathers had a notion that if its seeds were ground up with wheat, the bread made from the flour would be black. In addition, the plants themselves turn black when dead and dry. The flowers are fertilized by bees, which alone among the honey-seeking insects are powerful enough to open the closed lips to get access to the honey. Common Cow-wheat is abundant in dry woods and on heaths, and is partially parasitic upon roots.

*Annual: Flowers May to September.*—Stem, erect, six inches to one foot high, branching. Leaves, almost stalkless, very



narrow, with even margins, and produced in pairs. Flower, pale yellow, in axillary pairs. Calyx, five-toothed, the corolla tubular, straight, dilated at the mouth and two-lipped, the upper lip with the edges turned back, the lower one three-lobed. The four stamens will be found close under the upper lip, with the small stigma.

SMALL-FLOWERED YELLOW COW-WHEAT (*M. sylvaticum*), found in alpine woods from Yorkshire northwards. It has a small deep yellow corolla, which is borne more erectly than in *pratense*. Flowers July and August.

PURPLE FIELD COW-WHEAT (*M. arvense*). Found only in Norfolk, Suffolk, Essex, Herts, and the Isle of Wight. Conspicuous in the cornfields by reason of its large spikes of flower with their many colours. The bracts are reddish-purple the corolla rosy, with yellow throat, and the lips a full pink. Flowers July and August.

CRESTED COW-WHEAT (*M. cristatum*). Found only in the Eastern Counties in woods and cornfields. It has broad, heart-shaped purple bracts, with long fine teeth. Flowers in a dense spike—not so large as in *arvense*. Corolla-tube curved, yellow, the upper lip purple within. Flowers September and October.

From the Greek, *melas*, black, and *puros*, wheat.

### The Mint Family (*Labiatae*) Plates 56–61

CHARACTERS.—Glandular herbs or shrubs with square branches. Leaves opposite or whorled, without stipules. Flowers irregular, solitary or in crowded cymes. Calyx inferior, five-cleft, and ribbed. Corolla five-parted, two-lipped. Stamens, four perfect and one imperfect, attached to corolla-tube; anthers discharge pollen before stigmas are mature. Ovary two-lobed carpel, four-celled; style slender, springing from between the four lobes; stigma simple or divided. Fruit, one to four single-seeded nutlets.

#### Clary (*Salvia verbenaca*)

Plate 56

Clary is a species of sage that grows on dug wastes and in the corners of pastures.

*Perennial: Flowers June to September.*—Rootstock, woody. Stem, erect, branched and leafy, two feet high, ending in spikes of purple flowers in whorls. Root-leaves, oblong, toothed, and stalked; those from the stem stalkless, oval, wedge-shaped, and double-toothed; all are wrinkled. Calyx, bell-shaped, relatively large, for it entirely hides the tube of the corolla, which has a compressed short upper lip, and is of a blue-purple colour.



The heart-shaped bracts below the flowers often assume a remarkable red-purple tint.

MEADOW SAGE (*S. pratensis*). Perennial. Flowers June to August. Found only in Cornwall, Kent, and Oxford. The soft, wrinkled leaves have the edges cut into convex teeth. The flowers are large and bright blue, in whorls, usually of four or five flowers, on a tall spike.

The name *Salvia* is from the Latin *salvo*, to save or heal, from its former great repute in medicine.

### Gipsywort (*Lycopus europaeus*) Plate 57

Around the margins of ponds, along the banks of ditches and streams, the Gipsy-wort may often be found amongst the crowded vegetation. But it is the leaves more than the small flowers that are likely to first attract attention. It is generally distributed.

*Perennial: Flowers June to September.*—Rootstock, creeps or sends out runners. Stem, square, three feet high. Leaves opposite, elliptical, with very brief stalks, and their margins deeply cut. Flowers, small, stalkless, produced in dense whorls from the axils of the leaves. Calyx, and corolla both bell-shaped, the latter bluish-white dotted with purple, which gives a pinkish effect. Stamens, four, of which two are imperfect, the perfect ones keeping away from the two-lobed style, and discharging their pollen before the stigmas are mature.

From the Greek, *lukos*, wolf, and *pous*, foot. Application doubtful.

### Water Mint (*Mentha aquatica*) Plate 57

Although the cultivated herb Spear-mint (*M. viridis*) is not a native species, we have about a dozen species that may be set down as natives, but they are rather troublesome to distinguish. With the exception of the Corn-mint (*M. arvensis*), they are all inhabitants of wet and marshy wastes, flowering in August and September, and easily recognizable by their pungent odour. They have square stems, with opposite leaves, and a tubular corolla whose five lobes form two unequal lips to the mouth of the tube. The flowers are individually small, but rendered more conspicuous by being borne in dense whorls, the whorls being often so many and so close together as to form long spikes of bloom. They are all perennial herbs, with creeping rootstocks on or just below the surface of the ground, and giving off runners freely.

**WATER MINT** (*M. aquatica*) has oval, hairy, stalked leaves, the edges indented with rounded teeth. Flower-spikes dense, though with slight intervals between the whorls. The colour of the flowers varies from lilac to purple.

**HORSE-MINT** (*M. sylvestris*). Leaves, stalkless, more tapering to a point than in *M. rotundifolia*, smooth above, sharply toothed, whitish beneath. Stem, covered with white woolly hairs. Flowers, lilac, spike continuous.

**ROUND-LEAVED MINT** (*M. rotundifolia*). Leaves, stalkless, wrinkled above, woolly beneath, round-toothed. Flower-spikes, dense, pink or white.

**PEPPERMINT** (*M. piperata*). Leaves, stalked, margins with large teeth, smooth above, a few hairs along the nervures underneath. Flowers, purplish in spikes.

**MARSH-MINT** (*M. sativa*). In this and the two following species the whorls are produced from the axils of the leaves instead of as a terminal spike. The leaves are stalked, with sharp teeth. Flowers purplish. The throat of the calyx smooth, calyx-teeth lance-shaped, ending in a fine point.

**CORN-MINT** (*M. arvensis*). Leaves with blunt teeth. Calyx, very hairy, teeth shorter than in last, triangular. Corolla, hairy, purplish. Found in cornfields and waste places.

**PENNYROYAL** (*M. pulegium*). Leaves, small, with short stalks, slightly toothed, recurved. Calyx, two-lipped, downy or hairy, with hairy throat. Odour powerful.

## Wild Thyme (*Thymus serpyllum*) Plate 57

The Wild Thyme grows on the hills and the high heath-lands, usually among fine grasses that are close-cropped by sheep and rabbits; or if on lower ground it will probably be found upon the light and well-drained soil of a mole-hill, among mosses. The flower produces much honey, the whole plant is highly fragrant, and in consequence is very much visited by insects who carry the pollen.

*Perennial shrub: Flowers June to September.*—Rootstock, woolly. Stem, creeping, from which arise the flowering stems. Leaves, very small, stalked, egg-shaped, with even margins, often turned under. Flowers, rosy-purple, produced in spikes—or rather in whorls which are so closely massed together as to resemble a spike. Calyx and corolla, both two-lipped. The upper lip of the calyx is three-toothed, the lower cleft in two,



the whole of a purplish hue. The upper lip of the corolla is straight and notched, the lower cut into three lobes. There are two forms of flower—smaller and larger; the small are perfect, the larger bearing developed anthers only. It should be noted also that in the complete flowers the anthers shed their pollen before the stigmas are ripe; self-fertilization is therefore impossible.

*Thymus*, the ancient Greek name.

### Marjoram (*Origanum vulgare*) Plate 57

A familiar plant on the rounded banks and roadsides of chalk districts, where its broad bunches of purple flowers swarm with long-winged beetles and other insects and its sweet aromatic odour make it very noticeable.

*Perennial: Flowers July to September.*—Rootstock, short, from which runners proceed. Stems, annual, erect, one to two feet high, hairy. Leaves, short stalks, usually entire, but sometimes have blunt teeth. Flowers in globular heads. Bracts below the flowers coloured purple, but sometimes green. Calyx, dotted with yellow, has short teeth. Corolla, ordinarily purple, but on some plants the flowers are much smaller, and also of a paler tint—it is, in fact, dimorphic. The larger kind bear both stamens and pistil, the stamens maturing first (*protandrous*) to ensure cross-fertilization. In the smaller kind only the pistil is developed, and here again, of course, cross-fertilization must take place; the species, in fact, has entirely lost the power of self-fertilization.

From the Greek, *oros*, a hill, and *ganos*, brightness, from its giving brightness to hilly places.

### Basil Thyme (*Calamintha acinos*) Plate 58

Found throughout Britain in dry fields and on chalk downs.

*Annual or biennial: Flowers July to August.*—Stem, about six inches long that leans upon the ground for a couple of inches or so before rising into the air. Leaves, shortly stalked, oval, slightly toothed and pointed, and it has leafy bracts under the whorls of bright blue-purple flowers, which are rendered the brighter by their spots of white and dark purple.

**CALAMINT** (*C. officinalis*). A tall, hairy perennial. Flowers July to September. Rootstock, creeping, giving off runners. Stem, three feet high, with long branches. Leaves, oval, round-toothed edges. Flowers, red-purple, veined with white, in



one-sided whorls. Found on dry soils as far north as Westmorland and in Ireland. There are two sub-species—*C. nepeta*, with short, erect branches, small leaves (half an inch to one inch), with pale undersides, and small corollas (one-third of an inch), with broad middle lobes to the lower lip, rare; *C. sylvatica*, with large leaves (one to three inches) and large corollas (three-quarters to one inch), with middle lobe of lower lip no broader than the side lobes. Found on chalk in Hants, Devon, and Isle of Wight.

**WILD BASIL** (*C. clinopodium*). A perennial clothed with soft hairs. Flowers July to September. Rootstock, woody, with runners. Stem, slender, with few if any branches, one to three feet. Leaves, oval, slightly toothed, distant, one to two inches. Flowers, purple, hairy, one inch; upper and lower lips almost equal. Found in copses, hedge banks and wood borders as far north as Banff and Renfrew; rare in Scotland and Ireland.

The name of the genus is from two Greek words, *kalos*, beautiful, and *mintha*, mint.

### Ground-ivy (*Nepeta hederacea*) Plate 58

Trailing among the grass of the copse and hedgebank the Ground-ivy is one of the earliest of flowers to appear in spring. It is also known as Ale-hoof and Tun-hoof, being formerly used in brewing. It has not the remotest relationship to the real Ivy (*Hedera helix*).

*Perennial: Flowers March to June.*—The slender square stem creeps along the ground, and wherever it puts forth a pair of leaves it sends down a tuft of fibrous roots also. Leaves, roundish, kidney-shaped, deeply round-toothed on the margin. Flowers in whorls of three to six, borne in the axils of leaf-like bracts. Corolla-tube, long, slender at the base, afterwards dilating, the lower lip heart-shaped and flat. The purple-blue flowers are dimorphic, some being large and perfect, others small and devoid of stamens.

**CATMINT** (*N. cataria*) is a closely allied, but rare, species which flowers from July to September. This has an erect stem, with leaves approaching more to heart-shape, the teeth sharper; both stem and leaves downy and whitish. Flowers, white, marked with rose-colour.

The name *Nepeta* is the classical Latin one, and is said to have been given because the plant was common round the town of Nepete in Tuscany.



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P. 237.

1. Tree Sage (*Salvia officinalis*), p. 235. 2. Ground Ivy (*Nepeta hederacea*), p. 236.  
 3. Skullcap (*Scutellaria galericulata*), p. 237. 4. Skullcap (*Scutellaria galericulata*), p. 237.



**Self-heal** (*Prunella vulgaris*)

Plate 58

Commonest by the wayside and in damp pastures, and at one time highly valued as a medicine for inward and outward wounds. It was called also Carpenter's Herb, Hook-heal, Sicklewort, and Prunella.

*Perennial: Flowers July to September.*—Rootstock, creeping, with flowering branches three inches to one foot high. Stem, square. Leaves, stalked, long, oval, toothed, or with entire margins. The bracts of the flower-spike have purple edges. Both leaves and stem are more or less hairy. Flowers, mostly purple, sometimes white or crimson. There is a peculiarity in the form of the stamens worth noting. The filament branches at the tip, and one branch bears the anthers whilst the other is pressed against the upper lip. The flowers are dimorphic, large and small—the large perfect, the small having no anthers.

The name is a softened form of Brundella, from the German *Braune* (quinsy), because it was believed to cure that complaint.

**Skull-Cap** (*Scutellaria galericulata*)

Plate 58

Along the banks of rivers, and in marshy places the Skull-cap attracts attention by the beautiful blue of its corollas.

*Perennial: Flowers July to September.*—Rootstock, creeping. Stems, one or two feet. Leaves, opposite, oval lance-shaped, with very short stalks, and the margins cut into rounded teeth. Flowers, borne from the axil of each leaf; they turn their mouths in the same direction, so that they become a pair, and as their interiors are coloured a much paler blue they have a very pretty and striking effect with their half droop. Calyx, bell-shaped, two-lipped, the upper lip having at its back a broad, hollow pouch. Corolla, tubular, two-thirds of an inch long, which is three or four times the length of the calyx, getting broader towards the mouth. There are four stamens, each with a pair of anthers, and they will be found under the roof of the corolla, with the two-lobed style between them.

LESSER SKULL-CAP (*S. minor*), is similar but smaller, with a more slender, more branched stem, four to six inches long; the leaves not more than one inch long and with only one or two teeth at their base. The flowers are only one-third of an inch, of a pale purple tint, the lip dotted with dark crimson. Flowers July to October on swampy heaths and the banks of ditches.

From the Latin, *scutella*, a dish, from the shape of the calyx.

**Bastard-balm** (*Melittis melissophyllum*) Plate 59

The comparatively large flowers of this plant make it a very striking feature in those woods and copses of the west and south of England, where it makes its home.

*Perennial herb : Flowers May and June.*—Rootstock, creeping. Stem, erect, one to two feet high. Leaves, oval or oblong, in pairs, their margins cut into rounded teeth. These are much like those of the well-known garden Balm, except that they are without its pleasant fragrance. Flowers in whorls of from two to six from the axils of the leaves. Calyx, broad-mouthed, bell-shaped, cut into five short, wide lobes. Corolla, cream-white, with the large middle lobe of the lower lip dotted closely with purple in the centre and bordered with white ; the upper lip is undivided and flat. The four stamens will be found close under the upper lip, a pair on each side of the style with its two-lobed stigma.

BALM (*Melissa officinalis*) may often be found flourishing in back lanes and by waysides near habitations in the south of England, having been thrown out from gardens and established itself. It may be distinguished from the native plant by its much smaller and usually wholly white flowers, though these are occasionally found spotted with rose. Flowers July and August. Stroking the wrinkled foliage with the hand is, perhaps, the readiest way of detecting it when not in flower, for a slight touch is sufficient to release the fragrance.

From the Greek, *melitta*, a bee ; these insects have a fondness for the flowers.

**White Horehound** (*Marrubium vulgare*) Plate 59

This aromatic plant is found in waste places, but is only truly native in the Isle of Wight.

*Perennial : Flowers July to October.*—Stem, thick, one to one and a half feet high, branching, covered with cottony wool. Leaves, stalked, orbicular, much wrinkled. Flowers, dirty white, borne in whorls or clusters in axils of leaves. Calyx, with two hooked teeth. Corolla, upper lip erect, two-cleft.

**Hedge Woundwort** (*Stachys sylvatica*) Plate 59

Where the hedge is high and bosky, and the hedgebank runs up from a ditch, there, among the Brambles and the Bedstraws



and Stinging Nettles, you are almost sure to find the Hedge Woundwort.

*Perennial: Flowers June to August.*—Stem, rough, solid, strong-smelling when bruised, much branched, two or three feet high. Leaves, large, heart-shaped, strong toothed, covered with soft bristles, the upper surface densely—their stalks often longer than the blade. Flowers, in whorls around the upper part of the stem, six or more in a whorl. Calyx, nearly bell-shaped, with five triangular spiny teeth. Corolla, small, of a rich dark crimson or red-purple colour, the long lower lip marked with white. Fruits, four nutlets, at first green and shining, then black and rough.

MARSH WOUNDWORT (*S. palustris*), with stouter, hollow stem, less coarsely hairy, the leaves narrower, with shorter stalks or stalkless, odour not so obtrusive, and the flowers of a paler tint. Flowers July to September, on river banks and similarly wet places.

DOWNY WOUNDWORT (*S. germanica*). A rare plant, affecting roadsides and fields where the soil is dry; in Hants, Oxford, Kent, and Channel Islands. Covered with long, fine, white hairs. Stalks of stem-leaves short, those of radical leaves rather long. Leaves with rounded teeth. Corolla, smaller than in *S. sylvatica*, downy, pale rose-purple, with lower lip spotted. Flowers July and August.

CORN WOUNDWORT (*S. arvensis*). Branching from the base, slightly hairy. Whole plant small. Flowers, pale pink, marked with white, April to November, in fields and wastes.

WOOD BETONY (*S. betonica*). In all the preceding species the anther-cells diverge widely; in this species they lie parallel. Leaves, thick, oblong, heart-shaped; those from the rootstock forming a tuft. Flowers, large. Corolla, hairy, red-purple. Flowers June to August, in woody wastes.

The name is Greek, *stachys*, in allusion to the inflorescence.

## Common Hemp Nettle (*Galeopsis tetrahit*) Plate 59

The Hemp Nettle is one of a group of plants that too frequently get confused with Dead Nettle (*Lamium*), on account of the superficial resemblance of their foliage, and the similar squareness of stems and opposite branches. The Woundwort, the Hemp Nettle, and Dead Nettle come particularly close together, and are separated into different genera, chiefly on account of small differences in the structure of the calyx, and the forms of



the fruit. In *Galeopsis* the calyx is nearly bell-shaped, with five equal spiny teeth. The corolla-tube is straight, with a divided throat; the upper lip egg-shaped and arched, the lower three-lobed, with erect teeth where the lobes unite. Found generally near cultivated ground.

*Annual: Flowers July to September.*—Stem, bristly, three feet, swollen beneath the nodes, whence the leaves and branches are given off. Leaves, large, very coarsely toothed, on long stalks. Flowers, in dense whorls around the upper part of the stem, with leafy bracts beneath them. The teeth of the calyx are very long, straight and awl-shaped, equalling or exceeding the length of the calyx-tube. The corolla is purplish or white, but there is a sub-species (*G. speciosa*) in which the colour is yellow and purple.

RED HEMP NETTLE (*G. ladanum*), with downy stems, the nodes not thickened. The calyx-teeth are not longer than the tube. The corolla is rosy-purple, hairy and with mottlings of crimson and yellow on the lower lip. Flowers July to October, on chalky and gravelly soils.

The name is from the Greek, *galée*, a weasel or cat, and *opsis*, appearance.

### Black Horehound (*Ballota nigra*) Plate 60

Although Black Horehound is tolerably common in England, it extends only into the south of Scotland, and both there and in Ireland it is rare and doubtfully native. It has a fondness for hedgebanks, roadsides and waste places, where it may be passed as one of the Dead-nettles.

*Perennial: Flowers June to September.*—Stem, stout, much-branched, erect, two or three feet, covered with hairs which are usually directed downwards. Leaves, wrinkled, in pairs, all stalked and with toothed edges: the lower ones heart-shaped, the upper oval. Flowers in numerous whorls from the axils of the leaves, consisting of small clusters each with three to six blossoms. Calyx, tubular, strongly ribbed, and has five spreading teeth, which are longer than the tube of the corolla. The latter has a tubular base dividing above into two large lips, whereof the upper is concave and erect, hairy within and without, whilst the lower has three spreading lobes. The colour is a pale reddish-purple, sometimes white. Fruits, four shining brown nutlets, three-sided.

*Ballota* is the ancient Greek name.



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Pl. 100

1. Black Harehound (*Mallola nigra*), p. 240. 2. Red Dead-nettle (*Lamium purpureum*), p. 241. 3. Yellow Archangel (*Lamium alechodolom*), p. 241. 4. Wood Sage (*Teucrium scorodonia*), p. 242.

Q.24



**Red Dead-nettle** (*Lamium purpureum*) Plate 60

Dead Nettle appears to have been originally Deaf Nettle—or in its Saxon form *Deffe-nettil*—signifying powerless. In some districts it is Dumb Nettle. It is entirely unrelated to the Stinging Nettles (*Urticeae*), and apart from the resemblance in form of the leaves in certain species, there is little likeness between *Lamium* and *Urtica*, the large and graceful flowers of the former contrasting strongly with the inconspicuous green blossoms of the Stinging Nettles. In the absence of flowers the difference may be quickly seen by cutting the stems across, when *Urtica* will exhibit a round solid section, whilst *Lamium* is square and tubular.

*Annual: Flowers April to October.*—Leaves, heart-shaped, with rounded teeth, stalked. Bases of flower-bracts not overlapping. Flowers in whorls. Calyx, tubular, with five teeth. Corolla, tubular, with dilated throat, and two lips, purplish red. Whole plant often purple. Found on hedgebanks and waste places.

**HENBIT DEAD NETTLE** (*L. amplexicaule*). Annual. Flowers April to August. Lower leaves, small, stalked, orbicular. Flower leaves, sessile, deeply cut. Flowers in whorls. Calyx, hairy. Teeth, equal to tube in length, converging when in fruit. Corolla, slender, deep rose colour, often deformed. Bracts, broad, overlapping.

From the Greek, *laimos*, throat, from the shape of the corolla-tube.

**Yellow Archangel** (*Lamium galeobdolon*) Plate 60

The Yellow Archangel or Weasel-snout is one of the Dead Nettles, but it has escaped getting that name, probably because its leaves are much narrower than those of the Nettle. It is found more in the copse and bushy hedgerow than on the roadside waste, where the other species are plentiful.

*Perennial: Flowers May and June.*—The plant increases partly by means of runners from the rootstock. Flowering stem, square, two feet high; others which do not bear flowers run along the ground. Leaves, opposite, oval, stalked one or two inches long, with rounded teeth. Flowers in distant whorls— from six to ten in each—yellow. The corolla has a short tube, and the two long lips are distended, the upper vaulted, the lower three-lobed and spotted with brown. Stamens and style follow the curvature of the upper lip, against which they lie.

WHITE ARCHANGEL or WHITE DEAD NETTLE (*L. album*) is much more nettle-like; indeed, it is so like it before it is in flower that it cannot be distinguished at a casual glance. Perennial. *Flowers May to December.* Stem, square, two feet high, hairy. Leaves, heart-shaped, toothed, and stalked. Flowers one inch long, pure white, from six to ten in a whorl. Corolla-tube, curved, expanded at the mouth; upper lip vaulted, hairy.

### Wood Sage or Germander

(*Teucrium scorodonia*)

Plate 60

Should the novice encounter *Teucrium* before it commences to flower he might be pardoned for mistaking it for Sage. It is a plant of the dry wood and the stony hedgebank.

*Perennial: Flowers July to September.*—Rootstock, woody, giving off runners under the surface of the ground. Stems, erect, in tufts, two feet high. Leaves, soft, wrinkled, and downy in pairs at a distance from each other; stalked. Flowers, in racemes five to six inches in length, with stalked bracts. Calyx, bell-shaped. Corolla, yellowish-white, with a pinkish tinge, looking as though the upper lip had been cut off obliquely. There are four purplish stamens, two long and two short, and a long pistil ending in two spreading lobes.

The other species are rare and local.

The name of the genus is the old Greek appellation for the plant, dedicated to Teucer of Trojan War celebrity.

### Bugle (*Ajuga reptans*)

Plate 61

Common in spring-time in wood and field, and on the waste places by the roadside.

*Perennial: Flowers April to July.*—Rootstock, creeping, short, stout, runners being sent out, and these rooting. Flowering stems, six to twelve inches high. Leaves, from the root have long stalks; those from the stem, stalkless. Flowers, blue, the upper bracts dull purple, and the whorls come so close together that they form a terminal spike. Flowers of true Labiate type (page 232).

GROUND PINE (*A. chamaepitys*). An annual restricted to chalky fields and downs in the counties of Beds, Herts, Cambs, Essex, Kent, Surrey, and Hants. Flowers May to September. Entirely different in aspect from the other species. Stem, about six inches, branched from the base, with long, scattered hairs.



Radical leaves, lance-shaped, stalked, but these soon disappear. Stem-leaves, divided into three slender lobes. Flowers, small, yellow, produced singly in the axils of the long leaf-like bracts; the lower lips spotted with brown.

### The Vervain Family (*Verbenaceae*) Page 61

CHARACTERS.—Herbs. Leaves opposite or whorled, without stipules. Flowers irregular. Calyx inferior, tubular, two-lipped. Corolla tubular, two-lipped. Stamens four, attached to the corolla-tube. Ovary two- to four-celled, style simple. Fruit, a berry, a drupe, or four nutlets.

#### Vervain (*Verbena officinalis*) Plate 61

This bright-eyed but rather inconspicuous plant is found on dry wastes and roadsides, common in the south of England, rare in the north and unknown in Scotland.

*Perennial: Flowers July to September.*—Rootstock, woody. Stems, four-angled, one to two feet in height, the upper part branched. Leaves, oblong, cut either into a number of lobes arranged pinnately or into three larger lobes; opposite, in pairs or threes. Flowers in terminal spikes, with bracts. Calyx, tubular, with five teeth, one often shorter than the others. Corolla, lilac, salver-shaped. Of the four stamens two are sometimes imperfect. The slender style ends in a couple of lobes, of which, however, only one is stigmatic. Fruit, four nutlets.

The name *Verbena* was the classical Roman name for this plant especially, and also signified "altar-plants" in general.

### The Thrift Family (*Plumbaginaceae*) Plate 61

CHARACTERS.—Herbs. Leaves alternate or radical, without stipules. Flowers regular with bracts. Calyx inferior, tubular, the limb five-cleft, often coloured. Petals five, with long claws. Stamens five, opposite the petals, with thread-like filaments. Ovary one-celled, styles five. Fruit membranous, enclosed in the calyx-tube, one-seeded.

#### Sea Lavender (*Statice limonium*) Plate 61

Where the Sea Lavender grows, on sand-dunes by the sea and on muddy shores, it may often be seen covering great tracts with continuous sheets of purple bloom, reminding one of the purple heath on the moorlands and hills.

*Perennial: Flowers July to November.*—Rootstock, woody, creeping and branching. Flower-stems, angular, twelve to eighteen inches high, considerably branched in the upper part,



and nearly every branch bears flowers. Leaves, radical, long-stalked, lance-shaped, mid-rib prominent, five or six inches long. Flowers regular, their parts in fives, with short footstalks, grouped in cymes and these arranged in panicles. Calyx has a purple tinge. Corolla, bluish-purple. There is a little tooth between the lobes of the calyx in this species only.

Other native species are :

UPRIGHT SEA LAVENDER (*S. binervosum*). Perennial. Flowers July and August. Rootstock, branched, but does not creep; short and upright. Leaves, on much shorter footstalks than those of *limonium*, and instead of the one rib they are marked near the base with three nerves. Flower-stems do not exceed one foot in length; they are branched from the middle. Corolla, blue-purple, but the lobes of the calyx are white. Extends from the south coast to Wigton on the west coast, and only to Lincoln on the east.

MATTED SEA LAVENDER (*S. bellidifolium*). Perennial. Flowers July and August. Rootstock, much branched and matted. Stems, branched from a little above the rootstock, the branches being of a zigzag character, and few of them bearing flowers. Leaves, spoon-shaped, on short stalks, ribbed and three-nerved, small and few. Flowers, small, pale lilac. Rare. Confined to the salt marshes of Norfolk, Suffolk, and Cambridge.

From the Greek, *statice*, and applied to an astringent herb.

### Thrift or Sea Pink (*Armeria maritima*) Plate 61

The natural habitat of this old-fashioned garden plant is on the rocks and cliffs of the seashore, or the rocky sides of high mountains, where the pale rosy heads of flowers rising from the bright green cushions of grass-like leaves make a brilliant display.

*Perennial : Flowers April to October.*—Rootstock long, thick, woody, and much branched. Every branch ends in a bundle of leaves that are truly linear, being about one-twentieth of an inch in breadth, and usually about four inches long. From the centre of this leaf-bundle rises the smooth, softly hairy flower stem, six to nine inches long, ending in a silvery bud or a half-round bunch of flowers, with its involucre of thin, tough scales. The lowest of these scales are prolonged downwards to form a purplish sheath, half an inch long, round the stalk. The individual flowers are separately stalked, and may be separated easily from the cluster. Calyx, five-lobed, funnel-shaped, of similar character to the involucre. Corolla, five-clawed petals. There are



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Pl. 61.

1. Bugle (*Ajuga reptans*), p. 242. 2. Vervain (*Verbena officinalis*), p. 243.  
3. Sea Lavender (*Statice limonium*), p. 243. 4. Thrift (*Armeria maritima*), p. 244.



Q. 245.  
 1. Devil's-tongue Plantain (*Plantago media*), p. 245. 2. Annual Seablite (*Suaeda maritima*), p. 247.  
 3. Good King Henry (*Chenopodium bonus-henricus*), p. 248. 4. Blood-veined Dock (*Rumex*



five yellow anthers, and the ovary bears five long, thread-like stigmas. The central flower in each head opens first, and the stamens mature before the stigmas.

## The Plantain Family (*Plantaginaceae*) Plate 62

**CHARACTERS.**—Annual or perennial herbs. Leaves mostly radical, parallel-ribbed. Flowers regular, green, usually in spikes. Sepals four. Corolla thin, dry and semi-transparent, with four spreading lobes. Stamens four, attached to corolla-tube, with hair-like filaments, and large versatile anthers. Ovary two- to four-celled with thread-like style; the stigmas consisting of two lines of hairs. Fruit, a one- to four-celled capsule.

### **Lamb's-tongue Plantain** (*Plantago media*) **Plate 62**

The Plantains are among the despised of our wild-flowers, but there must be something worthy of respect in a plant that has contrived to get itself so taken throughout the world that it is known wherever Europeans have been, and is called by the coloured races the White-man's Foot. They are certainly out of place on a garden lawn; but the Lamb's-tongue Plantain in flower on a bank is a thing of beauty. It is found in dry pastures and waste places.

*Perennial; Flowers June to October.*—Leaves, radical, with strongly developed parallel ribs on the under surface. Flowers, borne on tall spikes which spring from the axils of the leaves. Each blossom consists of four persistent sepals, a salver-shaped corolla with four lobes, between which are fixed the four stamens surrounding the long, simple, and hairy style. The purple stamens form the most conspicuous feature of the flower-spike. Seeds, brown, rough. Plant, more or less covered with short hairs.

**GREATER PLANTAIN** (*P. major*) has very broad leaves and broad, short leaf-stalks. Stamens, short. Anthers, purple. Seeds, black and rough. Flowers on pastures and roadsides, May to September.

**RIBWORT PLANTAIN** (*P. lanceolata*) has lance-shaped leaves, long and narrow. The flower scape is deeply furrowed, the flower-spike short. Stamens, long, white. Seeds, black, shining. Flowers on pastures and heaths, May to October.

**SEASIDE PLANTAIN** (*P. maritima*). Rootstock, branched, crown woolly. Leaves, narrower than the last, margins more parallel, ribs weak. Stamens pale yellow. Seeds brown, slightly

winged at end. Flowers on Pastures, salt marshes and rocks by the sea, June to September.

**BUCK'S-HORN PLANTAIN** (*P. coronopus*.) Leaves, narrow, linear, divided, or deeply toothed, ribbed, hairy. Stamens, pale yellow. Seeds, pale brown. Flowers on poor gravelly soils, chiefly near the coast, June to August.

The name *plantago* is the classic Latin one, from which the English name has been evolved.

### Shoreweed (*Littorella lacustris*)

Found throughout the British Islands, wherever there are lakes, ponds or canals on gravelly or sandy soil. It grows close to the margin, in quite shallow water, often in crowded turf-like patches., although it does not flower under water, but waits until a dry season has reduced the water-level or one of its runners has produced a colony on land.

*Perennial : Flowers July and August.*—Rootstock, white, more or less erect, from which emerge a large number of long, white, rarely branched roots. Leaves (five or six), cylindrical, one to five inches in length, spring directly from the rootstock, and end in a sharp point. From their axils emerge firm green threads, four or five inches long, from whose tips new plants are produced. Upon land the leaves become flat and channelled, and may form a rosette. Flowers, white (borne only when the plant is growing upon land) of two kinds—male and female—borne on the same plant. The short flower-stalk supports a single male flower, consisting of four sepals with thin margins, a tubular corolla with four lobes at its mouth, four exceedingly long stamens with large pale anthers, and a rudimentary ovary. At the base of the scape and hidden among the leaf-vases are two female flowers. These have three or four unequal sepals, a pitcher-shaped corolla with three or four teeth at the mouth, and the flask-shaped ovary has a style three or four times the length of the flower. As both stamens and style suggest by their great length and their protrusion from the flower, the carriage of pollen is effected by the wind. Fruit, a bony capsule containing a single seed.

From the Latin, *littus*, the shore, and indicates the partiality of the species for lakes and pools.

### The Goosefoot Family (*Chenopodiaceae*) Plate 62

**CHARACTERS.**—Herbs or shrubs. Leaves alternate, undivided, without stipules. Flowers small, regular, green ; often dimorphic. Calyx



Inferior, of three to five sepals, joined or distinct. Petals not present. Stamens five, opposite the sepals. Ovary one-celled; styles one to five. Fruit, bladder-like, membranous.

## Glasswort or Marsh Samphire

(*Salicornia herbacea*)

Glasswort or Marsh Samphire is a seaside plant with insignificant flowers and no leaves. The general appearance of the plant as we meet with it on the mud-flats that are covered at high-water is that of a small, slender cactus, with cylindrical stems consisting of many close joints of a succulent character, bright green in summer, but turning to red later. It is common on all our coasts.

*Annual: Flowers July to September.*—Stem, woody at the base, made up otherwise of a succession of juicy internodes, six inches to one and a half feet. There are side branches of similar formation in pairs. Stem and branches terminate in flower-spikes. Flowers, green, minute, simple, produced on each side of the nodes. Each flower consists of a top-shaped perianth with three or four lobes and the mouth contracted: there are one or two stamens and two styles.

*CREeping GLASSWORT* (*S. perennis*) has a perennial woody rootstock which creeps underground, sending up rounded stems that lie along the ground, rooting and producing tufts of erect succulent branches, some barren, other flowering. The plant is browner in colour than the annual species, and it flowers from August to October on the English coasts only.

The name *Salicornia* is a Latin combination, indicating the plant's fondness for the salt-marsh.

## Seablite (*Suaeda maritima*)

Plate 62

Where there are salt-marshes, muddy or sandy shores on most parts of our coasts, there will be little difficulty in finding the Annual Seablite.

*Annual: Flowers July to October.*—Stems, erect, two feet high, or half-erect, or trailing on the ground. Leaves, long, fleshy, half-cylindrical, with an acute tip and tapering at the base; alternate. Flowers, small, green and partially hidden by the leaves; may be solitary, but are usually in threes or fives. Fruit, bladder-like, enclosing a single shining, brownish-black, beaked seed.

*SHRUBBY SEABLITE* (*S. fruticosa*), found only on the East



Coast lying between the Wash and the Thames, and Dorset. Perennial. Flowers July to October. It has thick woody stems two or three feet high, and numerous branches more or less erect, with a dense covering of slender, fleshy leaves, which have rounded tips and are dotted with white. The flowers, similar to those of the annual species, are produced either singly or in clusters of two or three. The seed is shining black.

### Good King Henry (*Chenopodium bonus-henricus*) Plate 62

A weed of the waste places, usually where the soil is made up of man's refuse. The plants are fairly uniform in colour, from stem to leaf and flower. They are fertilized by the wind. It is also known as "Mercury Goosefoot" and "All-Good."

*Perennial: Flowers May to August.*—Rootstock, thick, fleshy. Stems, erect, channelled, one to three feet in height. Leaves, large, dark green, hastate, that is, like the head of an ancient halberd. In some places they are used as a substitute for spinach. Flowers, small, green, in spikes, forming a terminal panicle. Ovary, an utricle, containing a single seed.

All the other British species are annuals.

**STINKING GOOSEFOOT** (*C. vulvaria*), with spreading stems, small, greasy, mealy, untoothed leaves, grey-green, with an odour like rotten fish.

**MANY-SEEDED GOOSEFOOT** (*C. polyspermum*), with several spreading branches, ovate leaves, and many minute, rough, dark-brown seeds.

**WHITE GOOSEFOOT** (*C. album*). Leaves, ovate, covered with a white mealy substance, upper portions *toothed*, sepals keeled, seeds dark, shining, very minutely dotted.

**RED GOOSEFOOT** (*C. rubrum*), with erect, frequently red, stems, smooth and shining, leaves variable in form, and in the character of the margin, which is sometimes toothed, sometimes entire; sepals not keeled.

The name is from two Greek words, *chen* and *pous*, signifying Goosefoot, in reference to the shape of the leaves in some species.

### Orache (*Atriplex patula*)

Spreading Orache, to give it the full name, is one of the many plants that are a nuisance to the kitchen-gardener, for though they come up freely on waste ground everywhere, they have a marked preference for soils that have been worked and manured.

*Annual: Flowers July to October.*—Stem, slender, more or

less erect, a few inches to three feet, and is striped with reddish resinous lines. The numerous branches spread widely in all directions, the lowest trailing so that one plant covers a large patch of ground. Leaves, lance-shaped, with a wedge-shaped base, some with a few irregular teeth. Flowers, minute green, in clusters on spikes at the ends of the shoots and from the axils. They are of two kinds—male and female—on the same plant. There are no petals; the males consist of three to five sepals and a corresponding number of stamens, with the ovary rudimentary. The females have only two sepals, which are united below; there are no stamens, but the ovary is developed and has two thread-like styles. Fruit, a bladder-like nut, enclosed in the enlarged calyx and containing a single seed.

FROSTED ORACHE (*A. arenaria*) is an annual of sandy seashores, marked by its entire silvery whiteness, and the scarcely striped buff-coloured stem, which branches from the base and spreads along the ground. The leaves have a wedge-shaped base, but vary from rhombic to halberd-shaped, irregularly lobed or toothed. The male flowers are in dense spikes, the females in the axils with a few males among them. Flowers July to October. In all the species the wind is the pollinating agent.

*Atriplex* is the old Latin name for this group of plants.

SEA PURSLANE (*A. portulacoides*), a plant of the sandy and muddy seashores demanding attention because of its striking whiteness, due to a mealy coating over stem and leaves alike. It is a shrubby perennial with a branched, woody rootstock, and the lower part of the stem is woody also. This may be as much as three feet long, but as it leans upon the ground the height of the plant is supplied by the erect branches, one to one and a half feet. Leaves, thick, mostly in pairs and erect, oval or spoon-shaped, with blunt or rounded tips and tapering to a long, narrow base. The branch ends in a two-inch spray bearing close clusters of minute yellow flowers. July to October.

STALKED SEA PURSLANE (*A. pedunculata*) is an annual, found only in muddy salt-marshes on the east coast of England from Lincolnshire southwards. It is in most respects similar to the perennial species, but shorter and smaller. Stem, sparingly branched, three to eight inches high. Leaves, only half the dimensions of the other, and more slender in proportion. Flowers, in small clusters in the axils of the leaves, August to October.

The Purslanes are classified by some botanists in a separate genus, *Oblone*.



## The Buckwheat Family (*Polygonaceae*) Plates 62-63

CHARACTERS.—Herbs. Leaves alternate and sheathing membranous stipules. Flowers with jointed footstalks. Sepals, three to six; petals not present. Stamens five to eight, opposite the sepals. Ovary egg-shaped, three-sided or compressed; styles one to three. Fruit, one-seeded, compressed, or three-sided, or winged.

### Docks (*Rumex*)

Among the most striking of our wayside weeds, owing to their size and abundance, must be numbered the members of the genus *Rumex*, of which there are from eleven to fifteen British species according to the lists of different authorities. Identification is not easy. The flowers, though produced in abundance, are very small, and being pollinated by the wind, are green: so that little help can be obtained from them at first. But it is essential that we should at once seek to know their structure. The plants are either perennial or biennial. The floral envelope is known as a perianth, and consists of six green leaves, which will be referred to as sepals. These are in two series, three outer and three inner, the latter becoming much enlarged after the flower has been pollinated. Within these are six stamens arranged in three pairs, and a three-sided ovary with three thread-like styles, ending in brush-like stigmas. In most of the species, one or more of the inner sepals bears a tubercle, whose character is useful for identification purposes. In the fruiting stage, these inner sepals, enlarged, become leathery and embrace the three-sided fruit.

BLOOD-VEINED DOCK (*R. sanguineus*) (Plate 62) is a widespread perennial of which there are two superficially different forms: one which supplies the distinctive name has the veins coloured red and the remainder of the leaf more or less suffused with dark red; in the other the whole leaf is uniformly green. The red-veined form is rare and is found in woody or bushy places; the other, *viridis*, now known as rare, is found along hedgerows and roadsides. When in flower or fruiting, it may attain a height of four feet, the slender stem with few or no branches. Leaves are oval- or oblong-lance-shaped, slightly wavy, the root-leaves with a rounded or heart-shaped base. Flower-spikes, usually leafless except at the base; the fruiting sepals oblong, the upper one with a large, smooth tubercle. Flowers July and August.

CURLED DOCK (*R. crispus*) is a bold perennial, met with on



every roadside and in waste places everywhere, with large lance-shaped leaves from six inches to a foot long, whose sides are waved and crisped, and the base abrupt or tapered to the stalk. The leafy, branching stem is one to three feet high, bearing June to October numerous erect sprays of green flowers, sometimes tinged with bright red, the upper fruiting sepal with a smooth oval tubercle.

**BROAD-LEAVED DOCK** (*R. obtusifolius*), also a perennial, is found in similar situations, and is commonly troublesome in pastures. The leaves are equal in length to those of the Curled Dock, but much wider: those from the root oval-oblong, with blunt tip and a heart-shaped base, the midrib spotted thickly with dark red; the stem-leaves oblong-lance-shaped. The stout stem is two to three feet high. Flowers July to September. The sepals are long-triangular, with raised veins, and long, spreading teeth from the edges, the upper sepal (and sometimes others) has a large oval tubercle of a crimson colour, which tint spreads more or less over the sepal.

**SHARP DOCK** (*R. conglomeratus*) is a widely distributed perennial, with a preference for wet meadows and moist wastes. Flowers June to October. Leaves, similar in shape and size to those of the Curled Dock, but the base is rounded or heart-shaped. Flower-spikes, long, more leafy and the whorls of flowers more distant. The fruiting sepals are narrow-oblong, without teeth, and all of them with a large oblong tubercle.

**GREAT WATER DOCK** (*R. hydrolapathum*) is our largest and finest species, a distinct ornament to the riversides and water-courses that it makes its home, its branched and leafy flowering stems rising to a height of six feet. Leaves, broad, lance-shaped, one to two feet long, usually tapering at each end, but sometimes with a heart-shaped base. The fruiting sepals are somewhat triangular, and all of them have an oblong tubercle. Flowers July and August.

### Common Sorrel (*Rumex acetosa*) Plate 63

Our two smallest species of *Rumex* have been separated from the Docks in popular nomenclature under the name of Sorrels to indicate the sourness of their foliage. Their leafing does not suggest any close affinity with the Docks, though their flowering might raise a suspicion, turned to a certainty upon a close examination. Common Sorrel, which is much the larger of the two species, is abundant in most meadows, pastures and woods throughout the country.

*Perennial: Flowers May to August.*—Rootstock, slender, tufted, Radical leaves in a rosette, long-stalked, arrow-shaped, glaucous on the underside and somewhat fleshy. Stem, slender, one to two feet high, with stalkless leaves whose bases clasp their support. The stipules are brown. From the axils of the upper leaves long, slim flowering branches are produced, with the small flowers in whorls as in the larger Docks.

**SHEEP'S SORREL** (*R. acetosella*) is a much smaller plant that prefers the drier pastures and the sour soil of the heath, rendering its tufts conspicuous in the latter half of the year by its foliage developing a bright red tint. *Perennial. Flowers May to August.* Rootstock, branched, creeping. Radical leaves, in thick rosette, lying close to the ground, spear-shaped, the basal lobes being turned outwards. Stems, several, a few inches to a foot high, their leaves stalkless and the stipules silvery.

### The Buckwheats (*Polygonum*)

In the neighbourhood of manure-heaps and on the borders of cultivated ground one may come across the Common Buckwheat (*P. fagopyrum*), which was formerly included in the British Flora, but is now known to be of cultivated origin. In this country it is chiefly grown as a food for pheasants. It is an annual, with a tall, slender, branched, reddish stem, and heart-shaped, almost arrow-headed leaves with entire margins. Flowers in panicles. The individual blossoms consist of five pale reddish sepals, no petals, eight stamens, and three styles. The flowers are of two forms, one with long stamens and short styles; the other with short stamens and long styles. The fruit is large, three-sided, solitary in a nut, very like beech-mast. It will be noted that at the base of the leaf-stalk is a pair of thin stipules, which sheathe the stem and mask the swollen nodes that give the knotted appearance so characteristic of the genus. Flowers July and August.

**AMPHIBIOUS BUCKWHEAT** (*P. amphibium*), Plate 63. *Perennial. Flowers July and August.* Rootstock, sometimes creeping in the ground, at others floating in the water. If the plant is floating the leaves have long stalks; if growing on land they are almost stalkless. Stipules, tubular, large, smooth in water, bristly on land. Stamens, five, styles, two. Flowers, rosy-red. Found on the margins of pools and in other wet places.

From the Greek, *polus*, many, and *gonu*, a knee, from the knotty appearance of the stem.







**Knot-grass** (*Polygonum aviculare*) Plate 63

Though the Knot-grass may be found in most fields, it is in neglected gardens and waste places that it chiefly abounds.

*Annual: Flowers May to October.*—Stems, slender, straggling, prostrate, branching in all directions, three feet or more in length. Leaves, alternate, very variable, more or less slender, lance-shaped, with small silvery-white stipules, looking as though torn, and red at the base. The "knots" of its name are provided by the small pink or crimson flowers which are in the axils of the leaves. Sometimes these flowers are white, sometimes green, but pink is their more usual hue. The flower parts are the same as in the Buckwheats. Fruits, brown, finely scored and dotted.

Other British species of *Polygonum* are:

**BISTORT** or **SNAKE-ROOT** (*P. bistorta*). Perennial. Flowers June to September. Rootstock, large, twisted. Radical leaves, long, egg-shaped, the upper part of the leaf-stalk winged. Stem leaves, almost stalkless, broader near the stem. Flowers, pink or white, producing honey. Found in moist meadows.

**SPOTTED KNOTWEED** (*P. persicaria*). Annual. Flowers July to October. Stem, erect. Leaves, long, narrowly lance-shaped, with a black heart-shaped patch in the centre, downy beneath; the stipules fringed with a few long hairs. Flowers, flesh-coloured. Stamens, six. Styles, two. Found in moist places.

**BLACK BINDWEED** (*P. convolvulus*). Annual. Flowers July to September. Stems, twining. Leaves, similar to those of the true *Convolvulus*, the lobes more pointed; Stipules, short. Sepals, green, with paler margins. Found in fields and wastes.

**SEASIDE KNOT-GRASS** (*P. maritimum*). Similar to the common species, but more woody and stouter. Perennial. Flowers July to September. Leaves, much thicker, and on the underside they are glaucous, and the nerves form a network. Stipules, flowers and fruit are alike larger.

**PALE-FLOWERED PERSICARIA** (*P. lapathifolium*). This and the next species are more closely allied to the Buckwheats than to the Knot-grass. Annual. Flowers July and August. Stem, more or less ruddy, several feet long, partially resting on the ground, but not prostrate, rooting at the lower knots. Leaves, oval or broad lance-shaped, short stalks, often with a black blotch on the upper side; the loose stipules sometimes fringed. Flowers, pale, greenish, borne in stout cylindrical racemes. Found in fields and wastes.

**WATER PEPPER** (*P. hydropiper*). Annual. Flowers July to October. Common by ditches, streams, and other moist places. Stems, more or less erect, branched, two feet. Leaves, lance-shaped, scarcely stalked, often with a black blotch, downy beneath. Flowers, red or white in cylindrical racemes, one and a half inches long.

### The Daphne Family (*Thymelaeaceae*) Plate 63

**CHARACTERS.**—Herbs, shrubs, or trees, with acrid juice. Leaves entire, without stipules. Flowers, solitary, bundled, or in cymes; honeyed and odorous. Perianth inferior, tubular, four- or five-lobed. Stamens two to ten within the tube. Ovary one- or two-celled; style with stigmatic head. Fruit, a drupe or berry.

### **Spurge Laurel** (*Daphne laureola*) Plate 63

The Spurge Laurel must be looked for in the copse and wooded hedge. It is fond of stiff soils, and is especially abundant on the chalk-hills. Its bright evergreen leaves make it conspicuous at a period when there is little fresh-looking vegetation, but it is often passed by in the belief that it is a young Rhododendron.

*Shrub : Flowers January to April.*—It seldom exceeds four feet in stature, and is but slightly branched. Leaves, tough, leathery, oblong, sharp-pointed, almost stalkless, clustered at the upper end of the stems. Flowers, yellow-green and smooth, produced in small cymes from the axils of the upper leaves. The flower has a tubular perianth, with four spreading lobes, there being no distinction between sepals and petals. There are eight short stamens with yellow anthers attached to the tube in two series. In some of the flowers there is no style; in others of the same cluster it is present, but very short. The perfect flowers are succeeded by bluish-black berries.

**MEZEREON** (*D. mezereum*), grows somewhat taller, but the lance-shaped leaves are not evergreen. Early in the year, about February or March, it puts forth its fragrant pink flowers before a leaf has appeared. The leaves are produced in tufts at the end of the erect branches, and the flowers originate just above the scars of last year's leaves. The berries of this species are bright red. Both plants are very poisonous.

The name *Daphne* is from the classical myth of the daughter of Terra and Peneus, who was changed into a laurel to escape the importunities of Apollo.



## The Sandalwood Family (*Santalaceae*) Plate 64

**CHARACTERS.**—Trees, shrubs or herbs of semi-parasitic habit. Leaves mostly alternate, but no stipules. The flowers are perianths (that is, neither definitely calyx nor corolla), with three or five lobes to the mouth. The stamens correspond in number to the lobes. Ovary inferior, with a short style. Fruit, a nut or drupe containing a single seed.

### Bastard-Toadflax (*Thesium humifusum*) Plate 64

This unassuming little plant is the only British genus. It is more or less parasitical, for it exists, at least partially, at the expense of grasses and other pasture plants. It is found only on the chalk-hills of South-east England.

*Perennial herb: Flowers May and June.*—Rootstock, woody, with fibrous roots attached to those of neighbouring plants by means of white knob-like suckers. Stems, numerous, prostrate, beset closely with slender leaves about an inch long. Flowers, tiny, one-sixth of an inch across, in clusters or loose sprays at the ends of the branches. Each blossom consists of a funnel-shaped perianth, green on the outside, except that the five triangular lobes around the mouth are bordered with white. The interior is white. A short stamen is attached to each segment of the perianth, and the short style has a knobbed stigma.

The significance of the name adopted by Linnaeus for the genus is doubtful; but it is known that a plant of similar name was used for making the victor's crown in the ancient Greek sports in honour of Thescus.

## The Birthwort Family (*Aristolochiaceae*) Plate 64

**CHARACTERS.**—Herbs or shrubs, often climbing, of tropical and warm regions. Leaves alternate, stalked, without stipules. Flower tubular or bell-shaped perianth, usually with three lobes, and from three to thirty-six stamens. The ovary has four to six cells and six styles. Fruit, a four- to six-chambered capsule.

### Birthwort (*Aristolochia clematitis*) Plate 64

Believed to be an escape from ancient gardens, where it was grown for medicinal properties. Birthwort is not found farther north than Yorkshire.

*Perennial Herb: Flowers June to September.*—Rootstock, woody, creeping. Stem, unbranched, two feet high. Leaves, large, alternate, long stalks, heart-shaped, three to six inches

across, glossy above and glaucous beneath. Flowers, pale yellow, in clusters from the dilated bases of the leaf-stalks; each cluster consisting of from four to eight blossoms. These are peculiar: there is no distinct calyx or corolla, so we speak of the perianth. There is a very short foot-stalk, apparently increased by the spindle-shaped ovary. The tubular perianth is inflated at its base to accommodate the sexual organs, then narrows into a curved tube and expands above into an oblique lip. In the enlarged base there are six anthers attached throughout their length to the short, stout style and covered above by the six lobes of the stigma.

### The Spurge Family (*Euphorbiaceae*) Plate 64

CHARACTERS.—Herbs, shrubs, or trees, often with milky juice. Leaves usually alternate, simple, without stipules. Flowers small, stamens and pistils usually in separate flowers. Male flowers with one or more stamens; ovary, rudimentary or absent. Female flowers with two- or three-celled ovary, and two or three styles. Fruit, a two- or three-celled ovary, with one or two seeds in each cell.

#### The Spurges (*Euphorbia*)

The whole of the British species of Spurge have a singular character, which enables the tyro in botanical matters to determine the genus at a glance, though he may not be so successful in distinguishing between the twelve or thirteen native species. This singularity is chiefly due to the colour and arrangement of their flowers. These possess neither sepals nor petals; instead, a number of unisexual flowers are wrapped in an involucre. An individual involucre of, say, the Sun Spurge, should be detached and examined with the aid of the pocket-lens. It will be seen to have four lobes, to each of which is attached an orbicular yellow gland. Within the involucre are several flowers, each consisting of a single stamen on a separate jointed flower-stalk, and from the midst of these arises a single pistillate flower on a long, curved stalk. With slight variations this is the form of inflorescence which characterizes the whole genus. All the species have milky sap and are poisonous.

The most common British species are:

SUN SPURGE (*E. helioscopia*), Plate 64. Annual herb. Flowers June to October. Leaves, yellow-green oval, the margin of upper half toothed.

WOOD SPURGE (*E. amygdaloides*). Perennial, stout, red, shrubby. Flowers March to May. Leaves, oval, thick, tough.



reddish, two to three inches long, hairy beneath, lower on short stalks. Involucral glands half-moon shaped, yellow. Found in woods and copses, chiefly on clay soils.

**PETTY SPURGE** (*E. peplis*). Annual. Flowers July to November. Leaves, thin, broadly oval, on short stalks, three-quarters of an inch long. Involucral glands half-moon shaped (*lunate*), with long horns. Found in waste ground, market-gardens and flower-beds.

**DWARF SPURGE** (*E. exigua*). Annual. Flowers July to October. Much branched. Leaves, very narrow and stiff. Involucres, small, almost stalkless. Involucral glands, rounded, with two blunt-pointed horns. Found in fields, especially on light soil.

**SEA SPURGE** (*E. paralias*). Perennial, bushy, many-stemmed, stout, reddish, woody below. Flowers July to October. Leaves, narrow, concave, very thick, arranged in whorls. Points of involucral glands short. Found on sandy shores.

**CAPER SPURGE** (*E. lathyris*). Biennial. Flowers June and July. Stem, short and stout, three to four feet, second year. Leaves, narrow, broader at base, opposite, alternate pairs placed at right-angles to each other. Found in copses and woods. Fruit used as a condiment.

The name is the same as that used by the ancient Greeks.

## Dog's Mercury (*Mercurialis perennis*) Plate 64

The Mercuries are nearly allied to the Spurges, and share their poisonous qualities. They are common weeds of the woodland and wayside.

**Perennial:** *Flowers March to May.*—Rootstock, creeping. Stem, unbranched, hairy, one to one and a half feet. Leaves, opposite, stalked and toothed, oval or lance-shaped. The male flowers are distinct from the females; stamens and pistil are not borne by the same flower. The flowers are minute, green, consisting of three sepals, no petals, the female with a two-celled ovary, two simple styles, and two or three stamen-filaments, but no anthers. The male flowers in slender racemes contain from eight to twenty erect stamens on a central disc, with slender filaments and pendulous anthers, but no trace of an ovary. Female flowers in a shorter spike, with only two or three flowers.

**ANNUAL MERCURY** (*M. annua*) is almost free from hairiness, with opposite branches, and leaves of very thin texture, smooth and shining, the edges fringed with hairs. The female clusters



of flowers sometimes contain a few males, but as a rule the two kinds are borne by different plants. Flowers July to October.

The name is classical, the god Mercury being supposed to have discovered some medicinal virtues in these plants.

### The Crowberry Family (*Empetraceae*) Plate 65

CHARACTERS.—Shrubs with a Heath-like habit. Leaves, alternate, without stipules. Flowers, in sprays on short shoots from the stem, consisting of three sepals, three petals, both persistent. Ovary, globose has three to nine cells and as many short styles. Fruit, a drupe containing two to nine stones.

#### **Crowberry (*Empetrum nigrum*)** **Plate 65**

Plentiful in the north, its range extends south as far as Devon and Dorset, and formerly it was found in Sussex. Though it may be described as a moorland plant, we may find it in wet peat-bogs or among dry rocks, on bare sand or among the heath. From the short stem, which lies upon the ground and roots from its lower surface, slender branches trail from six inches to one and a half feet long, densely clothed with short-stalked elliptical leaves. These have their edges rolled back, their fringes interlocking and forming a tube in which the stomata can function in wet conditions, whilst the leaves are protected from excessive transpiration in dry, exposed places. These leaves are only about a third of an inch long, evergreen, smooth above and downy on the lower surface; they turn red when old, but may be shed whilst still green.

Flowers, purple-red, very minute; without stalks, and produced in spring from the axils of the leaves near the ends of the shoots. They have two or three sepals and the same number of petals. The three or four stamens have long filaments and red anthers; and the ovary has a short style branching into from six to nine stigmatic lobes.

The edible fruits are drupes, about a third of an inch across, and usually black, containing from one to nine seeds.

The Crowberry is known also as Crakeberry and Black-berried Heath. It is native in Northern and Alpine Europe, in North America, on the Andes of South America, and in Fuegia.

The name of the genus is an old Greek word compounded of *en*, upon, and *petron*, a rock, alluding to its growth often upon bare, stony ground.

## The Nettle Family (*Urticaceae*) Plate 65

**CHARACTERS.**—Herbs, shrubs, or trees. Leaves, opposite or alternate, usually with stipules. Sexes usually in separate small green flowers. Perianth, with three to eight lobes or parts. Stamens, corresponding in number with and opposite the lobes. Ovary, one- or two-celled. Fruit, various.

### Wild Hop (*Humulus lupulus*) Plate 65

The Wild Hop may not infrequently be seen in the copse and hedgerow, especially in the south of England. North of Yorkshire and in Ireland it occurs as a naturalized plant. It has a perennial rootstock from which are produced annually several long, thin, but tough and twining stems that grow very rapidly, and tightly clasp the nearest small tree or shrub. The rough leaves, lobed and coarsely toothed, are in pairs, and at the base of the leaf-stalk is a pair of long curved stipules. The Hop is what is termed a dioecious plant, because staminate flowers only are produced by one individual, and pistillate only by another, making cross-fertilization imperative. It is not the insects, however, that effect this crossing, but the wind. The flowers are all small; the staminate produced from the axils of the leaves in long drooping panicles. They have no petals, but there are five sepals and five anthers attached to their bases. Each pistillate flower has a membranous sepal, an ovary, and two long tapering purple stigmas. Two of these pistillate flowers are produced in the axil of a green, broad, concave bract. A number of these twin-flowered bracts are united into a dense spike, and after fertilization this develops into a large cone-like head of yellow scales with glands at their base, which yield a resinous substance called lupuline. The true fruit is a little nut, which is enclosed in the sepal under the bracts. Flowers July to August. It is the only British species. Derivation doubtful.

## The Bog Myrtle Family (*Amentaceae*) Plate 65

**CHARACTERS.**—Shrubs or trees. Leaves, alternate, simple. Sexes in separate flowers, which have no perianth, and are in spikes. Male flowers, two to sixteen stamens in a bract. Female flowers, a one-celled ovary with two thread-like styles which are stigmatic throughout, enclosed in two to four bracteoles. Fruit, a rough drupe containing a one-seeded "stone."



**Bog Myrtle (*Myrica gale*)**

Plate 65

Known also as Sweet Gale, Dutch Myrtle and Candle-berry Myrtle. A shrub growing from three to four feet high in bogs and damp moors. Leaves, yellow-green, lance-shaped, with the broadest part uppermost, shortly stalked, and toothed, alternate, and downy beneath, dotted with glands which secrete a wax which gives off a pleasant fragrance. The flowers have neither calyx nor corolla; they are gathered in a kind of catkin, with mere scale-like, concave bracts, the sexes on separate spikes, usually on different plants. The male spikes are about an inch in length, erect, and crowded; the stamens usually four to each bract, the anthers red. The female spikes are only a quarter of an inch long; the ovaries one-celled with two bracts, two thread-like styles that are stigmatic all over, and of a red colour to match the anthers. The fruits are drupes, with a fleshy outside and a bony inside. The leaves contain a bitter principle, and are said to be used in lieu of hops for brewing, following an ancient practice in Northern Europe.

This is the only British species; it flowers from May to July. The name is from *myrike*, the Greek name for the Tamarisk.

**The Reed Mace Family (*Typhaceae*)** Plates 65-66

CHARACTERS.—Herbs, perennial, marsh and aquatic, creeping root-stocks and narrow radical leaves with sheathing bases. Perianth of scales or hairs which persist, in cylindrical spikes, the sexes in different flowers on the same stems; male heads uppermost. Male flowers with few or many stamens with slender filaments. Female flowers consisting of a one- or two-celled ovary with simple style. Fruit, a drupe.

**Great Reed Mace (*Typha latifolia*)** Plate 65

There are two British species, perennial plants with long, narrow, grass-like leaves, the bases of which sheathe the stem. The stamens and pistils are produced in separate flowers, but upon the same plant. The flowers have no perianth other than a few slender hairs. The staminate flowers occupy the upper portion of the well-known spike or "mace," and each one consists simply of several stamens joined together, the anthers opening along their sides. The pistillate flowers consist of a stalked ovary with a slender style and a one-sided narrow stigma. The specific differences are as follows:

**GREAT REED MACE (*T. latifolia*).** Leaves, as much as one and a half inch across, in two rows, bluish green. Flowering stem







a

b



c

d

3



4

2

naked, six or seven feet high. Staminate and pistillate spikes, continuous, or but slightly interrupted. Growing in lakes and on the banks of rivers. Flowering July to August.

LESSER REED MACE (*T. angustifolia*). Whole plant smaller. Leaves, half the width, dark green, grooved at lower end. Staminate and pistillate spikes separated by an interval. Stigmas, broader. Ditches and pools. Less common than *latifolia*. Flowering in July.

From the Greek, *típhos*, a fen or marsh, from the habitat.

### Branched Bur-reed (*Sparganium ramosum*) Plate 66

Perennial, with creeping rootstocks, and long, narrow, bayonet-shaped leaves with blunt tips. Stem, branching, erect, as much as four feet high, with leaves sometimes five feet long, three-sided at the base, and an inch across. There are long, narrow bracts on the stem, and from their axils rise the flowering branches. The flowers form globose heads, of which it will be seen there are two sorts, the upper, smaller, and olive-coloured ones being the male flowers, whilst the lower and larger are the female heads. Individually, the flowers composing these heads consist of a perianth of three or six thin, spoon-shaped scales. In the male flowers there are two or three stamens, and in each flower of the female-head there is a one- or two-celled ovary, which develops into a pear-shaped drupe, fleshy without and hard within. Flowers June to July. Banks of ponds, ditches and streams.

The other species are :

UNBRANCHED BUR-REED (*S. simplex*). Stem erect, two feet, unbranched. Flower-heads, in a raceme; male, pale yellow, stalkless; female, on foot-stalks. Drupes, stalked, narrow at each end. June and July.

FLOATING BUR-REED (*S. natans*). Stem, limp, leafy, upper part floating, partially erecting itself when in flower. Leaves, floating. Flowers, similar to *simplex*. July and August.

From the Greek, *sparganon*, a swathing-band, in allusion to the shape of the leaves.

### The Cuckoo-Pint Family (*Araceae*) Plate 66

CHARACTERS.—Perennial herbs with tuberous or creeping rootstocks and radical leaves. Flowers, small, round a spadix which is invested by a spathe. Perianth segments six, or absent. Stamens, various. Ovary, one or more celled; style, simple or absent; stigma, a head or disk. Fruit, a one or more celled berry.



**Cuckoo-Pint (*Arum maculatum*)** Plate 66

Also known as Lords-and-Ladies, Cuckoo-pintle, Priest's-pintle, Calves-foot, Starchwort, Ramp and Wake-robin. About a foot below the surface of woods and hedge-banks is the tuberous rootstock, from which arise above ground in March the arrow-shaped leaves, often spotted with black or purple. From the midst of these leaves in April rises the flower-stalk, bearing an enormous pale green rolled-up bract-leaf. It unrolls and then resembles a monk's-cowl with a purplish cylindric column. The green envelope is called a spathe. The lower third of the spathe is marked off from the rest by a slight constriction, and the flowers are found to be in four series.

Proceeding downwards, there is first a ring of abortive stamens, each ending in a long, deflexed hair. A little lower is a series of perfect anthers, and below these a similar group of pistils, the topmost row of which consists of abortive organs with hair-like processes. Small flies are attracted to the spathe by the carrion-like odour of the spadix.

The spathe and spadix wither, but the ovaries develop into codlin-shaped pale scarlet berries. This species is plentiful throughout the country. There is one other species, *Arum italicum*, found locally from Cornwall to Sussex. It is larger and stouter in all respects; the upper part of the spathe bending over, and the spadix yellow. Flowers in June.

*Arum*, a Greek plant name.

**The Duckweed Family (*Lemnaceae*)** Plate 66

CHARACTERS.—Annual aquatic plants, scale-like, rarely producing seed; propagated in summer by buds, and in autumn by hibernating bulbils. Vessels, absent or rudimentary; roots (when present) sheath-tipped. Flowers, minute, rarely found; one to three in a spathe. There is no perianth, merely one or two stamens, and a one-celled ovary with a short style. Fruit, a bottle-shaped bladder (*utricle*) containing one or more seeds.

**Duckweeds (*Lemna*)** Plate 66

The Duckweeds are among the smallest and simplest of the flowering plants. They are all possessed of a more or less flattened green body that floats on the water, and which resembles a leaf. It is not a leaf, however, but a plant that produces no leaves, though it has roots and flowers. To call it a frond would be more accurate, from whose under-surface one or more simple unbranched roots descend, and in clefts of whose

margin are simple flowers. The flower consists of an envelope or spathe, within which is a bottle-shaped pistil, with one or two stamens beside it. These flowers are so minute that they are rarely seen. It is chiefly multiplied by the production of new fronds from its edges. In autumn the material of the frond is packed into heavy bulbils, which sink to the bottom of the pond, and there remain until spring, when they rise to the surface and begin budding afresh. The four species represent the whole of the genus, so far as Britain is concerned. The differences in the species may be thus briefly enumerated:

**LESSER DUCKWEED** (*Lemna minor*). The most frequent species. Frond, not more than a quarter of an inch long, egg-shaped, the top flat and bright green, underside very pale green and slightly convex, with a single root. Spathe, two-lipped, one much larger than the other. Stamens, two, one maturing before the other; style, long. Flowering in July.

**IVY-LEAVED DUCKWEED** (*L. trisulca*). Frond, thin and flat, nearly an inch long, tailed at one end, coarsely toothed at the other. New fronds emerge at right-angles to the parent. Roots, solitary. Stamens, two; style, short. June and July.

**GIBBOUS OR THICK-LEAVED DUCKWEED** (*L. gibba*). Frond, nearly round, narrowed at one end, large, almost flat, green, opaque on top, greatly swollen beneath, whitish, clear, the cell-structure being very noticeable. Root, solitary; stamens, two. Flowers June to September.

**GREATER DUCKWEED** (*L. polyrrhiza*). At once distinguished from the others by its bunch of roots from each frond. Upper surface slightly convex, dark green with seven nerves. Under-side purple, as also the upper margins. Stamens, two. Flower has been rarely seen.

The name is the old Greek appellation of the plant, *Lemna*, supposed to be derived from *Lepis*, a scale.

There is an allied plant, *Wolffia arrhiza*, which is the smallest flowering plant known to science. Its frond, which is without roots, measures one-twentieth by one-fortieth of an inch, flattened above, producing new fronds singly at the base of the old, which soon become separate. The flowers emerge from the upper side of the frond.

### The Pond-weed Family (*Potamogetonaceae*) Plate 66

**CHARACTERS.**—Herbs, marsh or aquatic, usually with creeping root-stocks, and long, slender, branched, and jointed stems. Leaves alternate or in two rows (but rarely opposite), sheathing the stem by their



bases; sometimes with sheathing stipules. Flowers, small, green, mostly with the sexes separate. Perianth, when present, various. Stamens, attached below the ovary, which is of one to four carpels with one style. Fruit of utricles, nutlets, or drupes.

### Pond-weeds (*Potamogeton*)

The Broad-leaved Pond-weed (*P. natans*) has tough, egg-shaped, floating leaves, and narrower submerged leaves. All have long leaf-stalks. The floating leaves always present the upper side to the air, and are always dry above. The flowers are greenish and unattractive, collected into a slender spike. Individually they consist of a four-parted perianth, with four stamens and four carpels. There is a species (*P. polygonifolius*) with smaller floating leaves and slender submerged leaves. Another is *P. coloratus*, with clearer leaves and shorter leaf-stalks. *P. crispus*, *P. densus*, *P. perfoliatus*, *P. praelongus*, etc., have only submerged leaves, which are more or less oblong.

The more generally distributed species are briefly described below. Most of them flower between June and September.

From the Greek *potamos*, a river, and *geiton*, a neighbour.

**BROAD-LEAVED POND-WEED** (*P. natans*). Plate 66. Floating leaves leathery, elliptic or lance-shaped, on long stalks and with long stipules. Flower-spike dense on a stout stalk.

**PLANTAIN-LEAVED POND-WEED** (*P. coloratus*). Leaves, all transparent, elliptic or oblong, on short stalks with short, broad stipules. Stems creeping below, sometimes sending out runners. Stagnant waters, mostly on peaty soils.

**REDDISH POND-WEED** (*P. rufescens*). Floating leaves rather leathery, but translucent, lance-shaped, on short stalks. Often tinged with purple or red. Flowering-spike stout; July to September. Ponds and ditches.

**VARIOUS-LEAVED POND-WEED** (*P. heterophyllus*). Floating leaves elliptical; thin, but somewhat leathery; sometimes absent. Submerged leaves slender-lance-shaped, limp and stalkless. Lakes and pools.

**SHINING POND-WEED** (*P. lucens*). All the leaves translucent, lance-shaped, with very short stalks; variable, with very small teeth near the base; mostly submerged. Spike stout and dense-flowered. Lakes, ponds and streams.

**PERFOLIATE POND-WEED** (*P. perfoliatus*). Leaves, clasping the stem, heart-shaped or lance-shaped, pellucid; all submerged. Spike dense-flowered. Lakes, ponds and streams.

**CURLED POND-WEED** (*P. crispus*). Leaves, all submerged, in



two rows, narrow-oblong, wavy, edges crisped and fine-toothed. Spikes few-flowered, flowers small; July and August. Ponds and ditches.

**CLOSE-LEAVED POND-WEED** (*P. densus*). Leaves heart-shaped, opposite, in two close ranks, their bases overlapping; translucent and finely-toothed. Spike four-flowered. Ponds and streams; July to September.

**SMALL POND-WEED** (*P. pusillus*). Stem, thread-like. Leaves, very narrow, thin, but rather opaque, half-clasping the stem, one to three-nerved. Spike few-flowered. Rivers and ponds; July and August.

### The Arrow-head Family (*Alismaceae*) Plate 67

**CHARACTERS.**—Herbs, marsh or aquatic, perennial, with chiefly radical leaves. Flowers, most complete in panicles or umbels. Perianth, inferior, of six segments in two series. Stamens, six, nine, or more attached below the ovary. Ovary of three, six, or more carpels; styles, short or wanting; stigma, simple or feathered. Fruit of leathery carpels without valves.

#### **Flowering Rush** (*Butomus umbellatus*) Plate 67

Ditches and the backwaters of rivers. June and July. The base is a stout creeping rootstock, from which all the leaves arise. These leaves are three or four feet long, of a slender, three-sided form, of cellular structure, and sheathing one over the other at the base. The flowering-stem is round, and the umbel starts from an involucre of three thin papery bracts. The foot-stalks of these flowers are from two to four inches long, the flowers one inch across, made up of a six-leaved perianth, in two series of three, but all coloured and spreading. There are nine stamens, and six very prominent carpels with short styles; both carpels and anthers are coloured like the perianth. This is the only species of the genus.

From the Greek *bous*, an ox, and *tomos*, cutting.

#### **Arrowhead** (*Sagittaria sagittifolia*) Plate 67

Herb, aquatic and perennial. Leaves, radical. From the base of the plant runners are thrown out, each terminating in a globose tuber. The leaves are arrow-shaped, stalks long and three-edged. The stem is leafless, but bears a number of flowers in series of threes. These flowers are of two kinds, staminate and pistillate, borne upon the same plant. There are three

sepals, and three large white petals with purplish spots at their base. The lower flowers contain carpels only, which are many in number, and which develop into a compact head of nut-like fruits. The stalks of these pistillate flowers are shorter than those of the staminate flowers above them, which contain purple anthers. Flowers July to September, and in England as an indigenous plant as far north as Cumberland; in Scotland it has become naturalized, and in Ireland it is of local occurrence. It is the only British species.

From the Latin *sagitta*, an arrow.

### Water Plantain (*Alisma plantago-aquatica*) Plate 67

A fibrous-rooted perennial, with a short stem, swollen and fleshy at its base. The leaves are eight or nine inches long, supported on thick but soft stalks, two or three times the length of the leaf. These stalks are very broad at the base, concave, and overlap each other. The leaf-blade has five or six parallel veins. These leaves are more or less erect. From the centre of the leaf-bases the flowering stem rises to a height of three or four feet. It is bluntly triangular in section, leafless; but about half-way up there is a whorl of narrow bracts, and from their axils flowering branches are given off. Each flower has a long, slender foot-stalk, and consists of three green sepals, three much larger pale rosy petals with yellow claws, six spreading stamens, and from twenty to thirty carpels. The bases of the stamens project, and on each side of them there is a honey-gland—twelve in all. Flowers from June to August. Found in ponds, ditches and streams, plentifully in the south, rare in the north. There is another British species:

LESSER WATER PLANTAIN (*A. ranunculoides*). Similar, but smaller. The leaves narrow, lance-shaped, three-nerved, about three inches long. Flowering stem about one and a half feet. Flowers pale purple, larger in proportion to plant than those of *A. plantago*. Bogs and ditches, May to September.

The name is said to be from a Celtic word, *alis*, water, in allusion to the habitat of these plants.

### The Frog-bit Family (*Hydrocharidaceae*) Plates 67, 68

CHARACTERS.—Aquatic herbs with opposite or whorled leaves. The sexes usually on separate plants, the six-parted perianth enclosed in one or more spathes. The male perianth in two series, the inner three often petal-like; stamens, on the perianth, three or more. Female



perianth superior, with rudimentary stamens and a one- to six-celled ovary, with three or six styles. Fruit, usually a one- to six-celled berry.

### Frogbit (*Hydrocharis morsus-ranae*) Plate 67

Aquatic herb. Floats upon the surface freely, sending out long horizontal runners, from whose joints tufts of long roots descend, and penetrate into the mud. On certain of these roots little bulbs are produced, from which new plants arise. The leaves are an inch and a half across, roundish-kidney-shaped, on long stalks; the undersides more or less reddish. The flowers, which are an inch across, consist of three small oblong sepals, and three large white crumpled petals. The stamens and pistil are in different flowers; the stamens are twelve in number, of which, however, three or six bear no anthers. There are three imperfect styles in this male flower. The female flowers have a fleshy gland at the base of the petals, and six imperfect stamens round the egg-shaped ovary. There are six styles united at their base. The male flowers (two or three) in a stalked, two-leaved spathe; the female flowers solitary in a one-leaved stalkless spathe. Flowers in July and August. This is the only species. It does not occur north of Durham, nor in Cornwall, and only locally in Ireland.

From the Greek, *udor*, water, and *charis*, delight = the delight of the waters.

### Water Soldier (*Stratiotes aloides*) Plate 68

In lakes and ditches the Water Soldier roots in the bottom only after flowering. The leaves all spring from the rooting base, and are sword-shaped, thin, stiff and brittle. Their edges are cut into bold teeth with sharp points, and they are channelled down the centre. They spread outwards on all sides from the centre. The flowers are an inch and a half across, and consist of a three-parted calyx, and three white petals. Beyond this individual flowers will be found to differ in that some have an egg-shaped ovary with six styles, which are each split into two at the apex. In this form the stamens are imperfect and bear no anthers, but they secrete nectar. In the other form, where of the numerous stamens twelve are perfect, there are three rudimentary pistils. The pistillate flower is solitary, but two or three of the staminate flowers come from the same envelope. The pistillate flower is succeeded by a green, flagon-shaped, six-celled berry which curves over until it is at right-angles to the flower-stalk.



The development of the seed-vessel, and the ripening of the slimy-coated seeds, takes place under water. After flowering, the plant descends to the muddy bottom for this purpose, and sends out runners with buds from between the leaves, so that the old plant is surrounded by a circle of attached young ones. Early in the autumn the whole family rises to the surface once more, where the runners decay and set the young plants free. Before the winter they all descend again for hibernation, and no more is seen of them until the spring impulse brings them to the surface. Flowering from June to August.

From the Greek *stratiotes*, a soldier.



Pl. 67.  
 1. Flowering Rush (*Butomus umbellatus*), p. 265. 2. Arrow-head (*Sagittaria sagittifolia*), p. 265.  
 3. Water Plantain (*Alisma plantago-aquatica*), p. 266. 4. Frog-bit (*Hydrocharis morsus-ranae*), p. 266.



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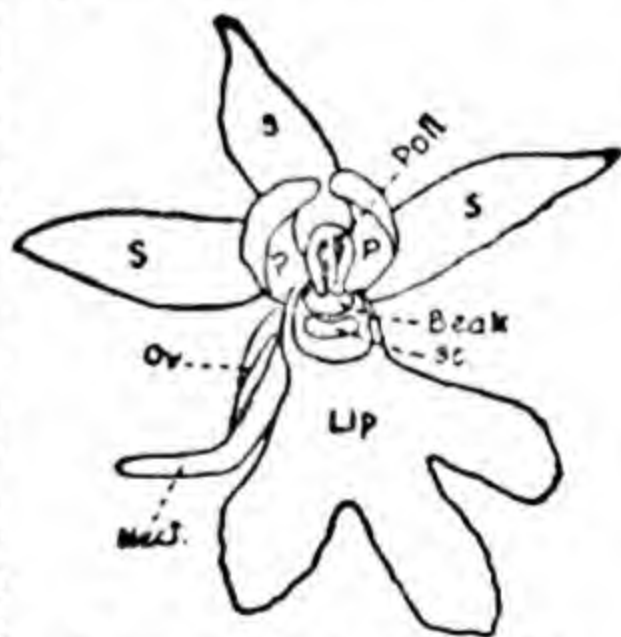


## A SHORT INTRODUCTION TO THE ORCHIDS

THE Orchids form a very distinct family (*Orchidaceae*) of perennial herbs, of which something like 7,000 species are known; these are distributed over the greater part of the earth, but are represented most abundantly in tropical regions. In the humid forests of warm countries they have largely abandoned the ground and taken to a life in the air, clinging to the trunks of trees; these are distinguished as Epiphytal Orchids.

In our northern zone all the Orchids are Geophytes, or plants of the earth. These have, as a rule, fleshy or tuberous roots, into which all their vital reserves are withdrawn before winter. The leaves are mostly long, strap-shaped, undivided, and with parallel nerves; their bases are wrapped around the stem. Where there are several leaves they are attached alternately to opposite sides of the stem, which is always unbranched.

The flower has three sepals and three petals, but as the sepals are coloured and more or less like the petals, it is customary to speak of the six floral leaves collectively as the perianth. The central one of the three petals is, in most cases, larger than, and of different form from, the other two, and known as the lip (labellum). In the descriptions of species that follow, the lip will be referred to always as distinct from the petals, purely as a matter of convenience. Structurally, the lip is the upper petal, but it appears usually as the lowest of the floral leaves. The ovary, which after fertilization becomes developed into the seed-vessel, is always below the perianth, and its frequent length may cause it, at first sight, to appear to be the flower-stalk. By a half-twist of this organ (or sometimes of the footstalk below it), the flower is reversed usually, this accounting for the common position of the lip. In many species



FLOWER PARTS IN ORCHIDS.  
 SSS, sepals; PP, petals;  
 Poll., pollinia; St., stigma;  
 Nect., nectary or spur;  
 Ov., Ovary.

the base of the lip is extended backwards to form a long or short hollow spur in which there may be free nectar. The relative positions of the flower-parts are indicated in the diagram.

It is when we come to a consideration of the sexual organs that the chief puzzlement of the Orchid-flower arises. We find a remarkable extension of the axis of the flower above the ovary, and this is known as the column. It is formed by a union of the style with the stamens, with the result that only one of the three stamens is developed. This will be found facing the lip, the two lobes of the anther standing side by side, each containing a mass of pollen-grains attached to a slender stalk, which may end below in a sticky gland. The only one of our native Orchids that departs from this arrangement is the Lady's Slipper, in which two stamens are developed. Below the glands of the pollinia extends the stigma, which is usually viscid. In the eighteen genera into which the British species have been divided there will be found modifications in detail of the general plan.

With few exceptions the Orchids rely upon insects to aid in the fertilization of their seed-eggs; and when the ripe seeds have been dispersed, they cannot be brought to the stage of germinating without the good offices of a fungus—a species of *Rhizoctonia*. If a ripe capsule of any species be opened it appears to be filled with dust, but if this is examined through a pocket-lens it will be seen to consist of very small, spindle-shaped seeds, of which the greater part of each is empty, only the centre containing a solid portion. This is the embryo; but there is no store of albumen, as is usual in seeds, to serve for the growth of the infant plant on germination. If the embryo is dissected under the microscope, it will be found that it is a mere mass of cellular matter without differentiation into radicle, stem-bud and seed-leaf, such as are found in most other seeds. It is little more advanced than the spore of a fern.

This type of structure renders the seeds extremely buoyant and capable of wide dispersion by air-currents; but unless they chance to alight upon soil where the right species of *Rhizoctonia* is already in possession, they will merely perish. This extraordinary fact was not known until in recent years; for lack of the knowledge, the trade-growers of exotic Orchids failed in most of their efforts to propagate the plants by seed-sowing, and had to send collectors abroad to keep up the supply of mature plants. In the rare instances where they contrived to raise seedlings, it was due more to accident than to knowledge—



from seeds shed naturally about the roots of living Orchids, or sown upon a compost that included some root-fibres of dead plants. In either case, the fungus was present; and its activity stimulated the seeds into fertility, though the grower never suspected the agent that was bringing his efforts to fruition.

The presence of a fungus in the roots of some Orchids was made known about eighty years ago, but its significance was not realized until the early part of the present century. A more recent story was contributed by Dr. J. Ramsbottom to the *Transactions of the British Mycological Society* for 1922. With this knowledge, the commercial grower of Orchids can now raise his thousands of seedlings from a single plant with almost as much ease as growing Sweet Peas or Mignonette.

If we take up an Orchid-root and lightly shake off the attached earth-particles, we shall find that the fleshy root-fibres are without the root-hairs by whose agency most plants absorb food from the soil. These are present only in very young seedlings of the Orchids; and through them the fungus threads enter the tissues of the plant. But a closer examination with the aid of a lens will show that the fleshy fibres of older plants are invested by a delicate web of fungus filaments which also penetrate the tissues of the roots: it is this mantle that has enabled the Orchid to dispense with the root-hairs. As the fungus has the ends of its threads actually in the tissues of the Orchid, a transfer of supplies from one organism to the other is a simple matter. Orchids have therefore for some reason and by some means taught themselves to rely entirely upon fungus-aid in the stimulation of their seeds to germination.

Ramsbottom, in *The Orchid Review* (1922), concludes with the following "incontrovertible facts":

"The roots of all Orchids growing naturally have fungus mycelium in their cortical cells. . . . The fungus present is always the same genus, i.e. *Rhizoctonia* of Bernard, *Orcheomyces* of Burgeff. The only known case where a different genus is concerned is the Japanese species, *Gastrodia elata*, where the toadstool *Armillaria mellea* forms an association with the tuber. Orchid seedlings, both native and cultivated, show the fungus present in their cells from the earliest stages of development. It seems probable that originally the fungus was a true parasite on the Orchid, but a study of the present course of events shows that the flowering plant normally has the fungus well under control and might now, with a certain amount of truth, be regarded as parasitic on the fungus."



As the Orchids appear to have become dependent upon fungi for essential elements of their food supply, so also the greater number of them would be unable to produce their imperfect seeds but for the aid of insects in carrying the fertilizing pollen from flower to flower, and stimulating the production of seeds from the ovules or seed-eggs in the ovary. In most cases the pollinia remain in the anther-pouches until removed, involuntarily by insect visitors, to be transferred by them to the stigmas of other flowers of the same species. In only a few of our native Orchids does the flower secrete free nectar: as a rule the insect seeking it has to pierce the tissues of the spur or the column in order to obtain it. Whilst engaged in this task its head is pressed against the viscid discs (mostly present) at the base of the pollinia-stalks, and the short interval of the visit is sufficiently long to allow of their firm cementing to the insect; so that, when the latter backs out of the flower, the pollinia are dragged out of their pouches and carried away. Immediately, they begin to bend forward on their stalks until they are more or less horizontal, in which position, when the carrier enters another flower, the pollinia will be pushed against the sticky surface of the stigma, where at least some of it will be retained. It then acts after the manner usual with pollen on stigmas: each grain sends out a shoot, which penetrates the tissues, reaches the ovary and brings about the production of seeds.

The comparative rarity of the British Orchids is, to a large extent, due to natural causes—their soil preferences and the climatic conditions which determine their distribution in different parts of the country, as well, probably, as the presence or absence of the requisite Mycorrhiza.

In some cases the natural distribution has been modified by human activity, such as the destruction of forests, the reclaiming of fen and bogland by drainage, the extension of towns, etc., and, in many instances, unfortunately, even lovers of flowers, through lack of forethought in gathering the blossoms indiscriminately, have deprived the species of the very means by which they live and multiply.

Plants, like animals, die from old age; and unless, in their vigour, they are allowed to produce seeds, the race cannot be continued.

## The Orchid Family (*Orchidaceae*) Plates 68-73

**CHARACTERS.**—Perennial herbs, roots tuberous or fleshy. Leaves (mostly radical) whose bases sheathe the stem. Flowers, irregular, solitary, or in spikes, racemes, or panicles. Perianth, superior, of six-coloured segments, of which the three outer (*sepals*) are the most uniform; the inner (*petals*) are unequal, the lateral ones forming a pair, but the third (*lip*) is usually larger, more or less lobed, and often ending in a hollow spur. The stamen and style are united to form the *column*. There is a single anther attached to the larger sepal (except in *Cypripedium*, which has two anthers opposite the petals), two celled, each cell containing one or more pear-shaped masses of pollen (*pollinia*) with footstalks (*caudicles*), whose base is a sticky gland. Ovary, long and often twisted, three-sided and one-celled; style, often ending in a beak (*rostellum*) below the anther and above the stigmatic surface of the column which faces the lip. Fruit, a three-valved capsule, containing a vast number of minute spindle-shaped seeds. *Note.*—The lip is the uppermost petal, which is brought to its usual lowest position by the twisting of the ovary or its footstalk.

### Bog Orchis (*Malaxis paludosa*)

The smallest of the British Orchids. It grows sparingly upon Sphagnum in bogs and swamps in England, Scotland and Ireland.

The plant springs from a small green egg-shaped tuber. The swollen base of the stem is sheathed with white scales, in which is forming a new tuber for the next year's growth. There are two or three small, thick, oval leaves near the base of the stem; and these have their blunt tips fringed with minute bulbils which develop into young plants. The stem ranges in height from two to five inches, ending in a spike of minute, yellow-green flowers, which appear from July to September.

From the Greek, *malaxis*, from its softness.

### Fen Orchis (*Liparis loeselii*)

The Fen Orchis springs from an egg-shaped tuber, growing on the surface of spongy bogs. The stem, swollen at the base, is sheathed with white scales, among which is the tuber for the next year's growth. The two or three leaves, from one to three inches long, are oblong-lance-shaped, pointed, smooth and strongly keeled. The erect, yellow flowers, from six to fourteen in number, form a loose spike. Flowering in June or July; the footstalk is twisted, but the lip keeps the upper position. Each flower is half an inch long, with spreading, lance-shaped sepals and narrower petals. The oval lip is larger than the



sepals or petals, and is turned upwards. The range of the plant in its typical form is restricted to the fenny districts of Norfolk, Suffolk and Cambridgeshire. In recent years a smaller form (the var. *ovata*), with broader leaves, has been found on moist sand-dunes on the opposite side of the country—in Glamorganshire and Carmarthenshire.

Greek, *liparos*, greasy, from the texture of the plant.

### Coral-root Orchis (*Corallorrhiza trifida*)

The roots consist of thick, fleshy fibres with many short branches. The slender, yellowish stem is tinged with green in its lower part; has one or two red-brown sheaths, and varies in height from four to ten inches. There are from four to twelve small, dingy flowers, appearing from June to August. Sepals and petals are much alike, olive-green, lance-shaped, with acute tips; the upper sepal and petals covering over the long column, the lateral sepals spreading. The lip is oblong, with two small basal lobes: white, with a few small purple tubercles. There is a very small spur, attached to the ovary. The anther terminates the column, and there are four roundish masses of waxy pollen. There is no beak.

Somewhat rare, except in those districts of eastern Scotland, where it is found in numbers. Its only English record is for Northumberland: in Ireland it is unknown. It is a small, leafless saprophyte that inhabits boggy or wet sandy woods and copses, flowering from June to August.

Greek, *korallion*, coral, and *rhiza*, root.

### Broad-Leaved Helleborine (*Epipactis latifolia*) Plate 68

The Broad-leaved Helleborine occurs in England, Scotland and Ireland, flowering from July to September. Height between two and three feet, but may be no more than ten inches, and others that exceed four feet. There are no tubers. The rootstock is a tassel-like bunch of hairy, fleshy cylinders springing from the base of the stem, beside which will be seen the white bud for the next year's growth. The lowest leaf is quite small in comparison with the next three leaves. From this point they become progressively narrower up the round, downy stem, which they clasp and then spread outwards. The bracts below the flowers are slender and taper to a long point, and the lower ones are longer than the ovary.



The truss of flowers in which the stem terminates is of considerable length. The ovary is pear-shaped, thickest at the top, rough with scattered fleshy points and supported on a curved and twisted stalk; the ovary itself is not twisted.

Sepals and petals are similar in size, and all spread. Sepals, dull green, tinged with purple; petals, edged with purple and more or less tinted with purple or rose. Lip, divided into two portions with a connecting hinge: the basal part turned up to enclose a deep basin with a dark purple floor covered with free nectar; the purple terminal lobe or epichile is heart-shaped, the little point turned under. There are bosses on either side of the base of the epichile.

The sexual parts agree pretty closely with those of the Tway-blade and Bird's-nest Orchis. There is a large anther attached to the top of the column and curved forwards over the stigma and the beak. The released, cream-coloured pollinia are stalkless, and lie upon the back of the white stigma, where they remain unless removed by an insect breaking the cap of the beak and setting free the viscid matter it contains. This cements the pollinia to the insect's head.

### Violet Helleborine (*Epipactis purpurata*)

A woodland species which appears to be restricted in its distribution to England. Stems, leaves and ovaries suffused with a purplish tinge. The leaves are smaller than those of *latifolia*, and less firm in texture: the lower leaves oval-lanced-shaped, the upper ones narrowing progressively until they become bract-like. The actual bracts are very long and slender, especially those of the lower flowers. Flowering late July to early September.

Sepals, green; petals, whitish-green tinged with pink. Basal half of lip, whitish-green; terminal segment white, with a tinge of pink. This part is heart-shaped and has a sharp point: a small central boss, with wrinkled side elevations. Anther not stalked, only its empty tip projects over the upper edge of the stigma. The beak is large. The ripe, grey-green capsule is three-angled, thickest a little below the top.

### Green-flowered Helleborine (*Epipactis viridiflora*)

Distribution is restricted to England. Flowering early in July. The lowest leaves are broad, and those above them have

a tendency to form two rows up the stem. The rootstock descends rather deeply, with fleshy fibres at different levels.

Flowers, yellowish-green. The terminal segment of the lip is triangular, with a long point, extended in woodland plants, but turned under in sand-dune forms; the bosses not much developed. The ovary, which is spindle-shaped, is smooth. The anther is stalked and slender, and the small beak disappears soon after the flower opens, so that the pollinia, becoming friable, drop pollen upon the stigma and so effect self-fertilization.

### Purple Helleborine (*Epipactis atropurpurea*)

The Purple Helleborine is somewhat rare. Though found generally over the British Isles, it occurs in only a few localities, and is restricted to the limestone formations.

The stem varies in height from six to eighteen inches. Flowering in July and August. Leaves, small, the lowest usually purple on the underside; the upper leaves lance-shaped. The bracts are smaller than the smallest leaf, but the lower ones exceed the flowers in length.

Flowers vary from dark yellow to rich dull purple, or purple and green; ovary roughly downy. The lilac terminal segment of the lip is oval, broader than long, with a small point, and, usually, there are three rugged elevations which often coalesce.

### Marsh Helleborine (*Epipactis palustris*) Plate 68

Distributed throughout England and the southern half of Scotland, but rare in Ireland, the Marsh Helleborine is by no means a common plant, though it may appear in numbers in its chosen localities. Marshy, boggy and wet places, often near the coast.

Stem from twelve to eighteen inches high; round and smooth below; the upper part is squarish and slightly downy.

The lower leaves are lance-shaped, tapering from a broad rounded base which clasps the stem. Below this is a sheath which wraps the stem closely. Veins strongly marked. The bracts are large and green, but shorter than the drooping flowers.

Ovary is downy, pear-shaped and purplish-green. Sepals pale dull green on the outer surface; the inside purplish. Petals white, tinged with purple. The hinged epichile of the lip is roundish with toothed margins, the ridges of the crest covered partly with yellow hairs; the concave basal half has five curved







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purple lines. The globular beak projects slightly in front of the stigma, which has large lobes at the sides. Flowering in July and August.

### White Helleborine (*Cephalanthera latifolia*) Plate 68

The White Helleborine, though considered rare, is plentiful on the chalk-hills of Southern England. Farther north it becomes less frequent, and Cumberland is the limit of its range. The plants are more or less tufted, several stems rising from the same creeping rootstock—there are no tubers, and none of the leaves are radical. They are all stem-leaves, from one to six inches long, arranged in two rows right up the stem, the upper ones lance-shaped with long points: all more or less clasping the stem and closely ribbed. The lowest leaf of all remains wrapped around the base of the stem; the next above it is short and oval. The large bracts are much longer than the slightly twisted ovaries. The plant is usually one to one and a half feet high.

Flowering late in May and throughout June. The creamy-white flowers are borne nearly upright on the undulating spike. Only the sepals separate: the petals remaining connected by their tips and curved over the column and the hollowed basal lobe of the lip. There is a constriction of the lip in the middle, dividing it into two portions, whereof that at the extremity is roundish and yellow. The opening of the flower consists in the turning outwards of this yellow lobe, which turns up again and closes the flower after fertilization.

There is no beak, the stigma being extended upwards in front of the lower third of the anther; and owing to the latter having a spring hinge the pollen-masses rest against the edge of the stigma. The pollen-grains are only loosely connected by slight threads, and form no stalk.

From the Greek, *kephale*, head, from the position of the anther.

### Narrow-leaved Helleborine (*Cephalanthera longifolia*)

Though wide in its distribution, the Narrow-leaved Helleborine is very rare. It is a beechwood plant, and the stature of the species is much the same as *C. latifolia*, but the stems are more liable to be solitary, and in the matters of foliage and flowers there is considerable difference. The straight-sided leaves are not only narrower, but are much longer; this is specially noticeable in the upper part of the plant. The flowers,

too, are restricted to the extremity of the stem, and are more slender in form and whiter in colour; the bracts—with the exception of that of the lowest flower—are very much shorter than the ovaries, and those of the upper flowers are minute. Flowers in May and June.

### Red Helleborine (*Cephalanthera rubra*)

The rarest of our three species of *Cephalanthera*, its distribution is restricted to limestone areas in Gloucestershire and Somerset. In woods and copses. Flowering in June and July. Stem, slender, purplish, six inches to one and a half feet high. Leaves, lance-shaped and sharp-pointed. Flowers, with sepals and petals rosy-purple; the lip is white with yellow lines and edged with purple, the terminal lobe a slender oval. The bracts are here longer than the downy ovaries. Beak absent.

### Twayblade (*Listera ovata*)

The Twayblade occurs in all parts of the country, in damp woods, pastures and green lanes, as well as on chalk slopes. Flowering from May to July. Often in great companies in the woods.

The rootstock has a bunch of long, fleshy fibres; there are no root-leaves. The plant has usually only two leaves (rarely there is a third), and these are placed as an almost opposite pair three or four inches up the downy stem. The stem is densely covered with down, and usually a foot high, but often two and a quarter feet, the upper part a spray of small yellow-green flowers, of which there are from thirty-five to eighty.

Each flower stands upon a footstalk as long as the short, ribbed ovary, mostly hidden by the short, pointed bract below it. Sepals, green. Petals and lip more yellow in their tint; the upper sepal curves a little over the column, but the petals and lateral sepals are more spreading. The lip is very long and narrow, divided from the tip nearly half-way into two straight lobes.

The column has a broad expansion at top, beneath which the anther is hinged. The beak is thin and tongue-shaped, arching over the stigma.

The name commemorates Dr. Martin Lister (died 1712), a British naturalist.

### Lesser Twayblade (*Listera cordata*)

The Lesser Twayblade is a plant of the uplands, found in moist spots in the mountain woods and among the heather of



the northern moors. An inhabitant chiefly of Scotland and the North of England, it is rare in Ireland. Usually only from three to six inches high. The slight, smooth, brownish stem is angled. The leaves are reduced to a length of an inch or less, and are heart-shaped with acute tips; of thin texture. The minute, brownish-green flowers are combined in a short, loose spray, which may be found from July to September.

The structure of the flowers follows pretty closely that of *C. rubra*. One small difference may be noted in the lip: at the base, in *C. rubra*, there are only indications of a pair of lateral lobes which are developed in *L. cordata*, curving upward, compelling insect visitors to go straight to the beak. The terminal divisions of the lip are relatively narrower also.

### Bird's-Nest Orchis (*Neottia nidus-avis*) Plate 69

Found in shady woods, principally those of beech, where there is a deep carpet of decaying leaves; it is widely distributed throughout the country, with the exception of the north-west of Scotland.

The rootstock consists of a spreading mass of thick, fleshy fibres. These are not roots, for on occasion buds are produced at their extremities from which young plants are developed. There is not a single leaf or other green part. Where leaves should be are long brown scales that clasp the stem. The full-grown plant is one to one and a half feet high, consisting of a stout stem ending in a dense or loose truss of from forty to fifty large flowers, also yellow-brown, which may be found from the latter half of May to the middle of July.

The flowers are half an inch long, from the tip of the upper sepal to the end of the lip; and their structure follows close upon the lines of those of *Listera ovata*. A great number of seed-capsules are produced on each stem.

Greek, *neottia*, a bird's nest.

### Leafless Orchis (*Epipogium aphyllum*)

The rarest of all the rare British Orchids. In the earlier half of the last century it was once found among decaying leaves in a damp wood in Herefordshire. Years later it turned up near Ludlow, in Shropshire; then, for a long period it was not seen again. Within the last few years, however, it has made several appearances in Oxfordshire.

The Leafless Orchis is a pale yellow-brown plant from three to eight inches high, springing from a few branched, fleshy root-fibres, the stem swelling above its base, wrapped by one or two sheaths. The few (from two to six) flowers are pale yellow, with short stalks and bracts. Neither stalk nor ovary is twisted, so that the three-lobed lip stands at the top of the flower. The ovary is short and stout. Sepals and petals narrow lance-shaped, with acute tips and the edges curved inwards. They spread outwards. The middle lobe of the lip is whitish and curved outwards. The inner parts comprise a short column, bearing the horse-shoe-shaped stigma, above which it is dilated into two lobes as a support for the anther; there is no beak. This Orchid is able to propagate itself vegetatively.

Flowering in August.

Greek, *epi*, above, and *pogon*, beard, from the lip being uppermost in the flower.

### Autumn Lady's-Tresses (*Spiranthes spiralis*) Plate 69

The Autumn Lady's-tresses has not spread farther north than Westmorland and Yorkshire; Scotland knows it not; and in South and Central Ireland it is rare. It is a plant of fairly dry soils, chalk, gravel and sand. Flowers in late August and September.

There are two or three tubers, tapering oval-oblong in shape, with a few thin root-fibres above them. From a three-tubered plant there may be two flower-stems. The flowering spike appears to be without root-leaves. Close against one side of the stem there is a hollow roll of two or three oval-oblong leaves, which will spread later, and from their centre will arise *next year* the new flowering stem. When expanded fully, these root-leaves are only about an inch long; there are five or six narrower leaves on the stem, which they enwrap closely, the upper ones bract-like and tapering to long points. The stem is covered with a dense coat of short white hairs, and varies from three to nine inches in height, of which two inches or more may be flower-spike, with a single crowded, spiral line of small white flowers, slightly tinged with green, and very fragrant.

There is little distinction between sepals and petals. All of them are directed forwards, and are only five mm. long. The two petals are united to the upper sepal, and with the lip and the lower sepals form a tube whose mouth is four mm. wide

Greek, *speira*, a spiral, and *anthos*, a flower.



### Summer Lady's-Tresses (*Spiranthes aestivalis*)

One of the rarest of British Orchids. This is an inhabitant of bogs, where it grows among Sphagnum-moss under acid conditions. Its only recorded localities in England are Wyre Forest in Worcestershire and the New Forest, Hampshire.

Larger than the Autumn species, the stem often attains the height of one and a half feet. There are several tubers, and they take a horizontal direction. Root-leaves are slender-oblong. Stem-leaves, narrow-lance-shaped. Stem, smooth. Flower-spike, downy. Flowers, white and arranged spirally. Flowering July and August.

### Cork Lady's-Tresses (*Spiranthes gemmipara*)

Cork Lady's-tresses springs from a pair of long cylindrical tubers: new ones for next year's growth being found whilst the plant is still in flower, with the remains of this year's supply. There is a tuft of slender leaves around the base of the stem, with others loosely wrapping and covering the stem almost up to the flower-spike. The outer root-leaves are shorter and broader than the inner ones, which have long, sharp points. The stem is five or six inches high. Spike, slightly downy, with bracts tapering to long points and are of equal length with the flowers, and overlapping closely, as well as covering the ovaries completely. Flowers, white, arranged in three straight, crowded rows.

Sepals and petals are of equal length: they converge to form a long hood over the sexual organs. The lateral sepals, owing to the grip of their lower margins, restrict the spreading of the broad, middle part of the long tongue-shaped lip, converting the flower into a tube. The lip expands again towards the toothed tip, and is streaked faintly with yellow. Flowering July and early August.

### Rydberg's Lady's-Tresses (*Spiranthes stricta*)

Rare and known only in the neighbourhood of Lough Neagh, in Northern Ireland.

The cylindrical tubers are much stouter than those of *gemmipara*, and there are from three to five of them. The lowest leaves, whose bases wrap the stem, are narrow-lance-shaped, about five and a half inches long: the stem-leaves are progressively more fully rolled around their support, and the upper ones have only their long-pointed tips free.



The flower-spike, which is three inches long and more downy than in *gemmaipara*, is much less dense, but the individual flowers are larger, whiter, and the yellow lines on the lip are much stronger. The bracts are longer than the flowers, are less flat, and have not the neatness of their overlapping shown in *gemmaipara*. Flowering in July and August.

### Creeping Lady's-Tresses (*Goodyera repens*)

The Creeping Lady's-tresses has been found in Cumberland, Yorkshire and Norfolk; otherwise, it occurs only in the pine forests of eastern Scotland.

There are no tubers, the perennial portion of the plant consisting of a creeping rootstock with a few fleshy fibres, which interlace and mat among the damp pine-needle humus and moss. Leaves, dark green, downy on the underside; the lower ones with short, broad stalks. The slender stem varies from four to ten inches high; the upper part covered with down, which extends to the flowers. The lance-shaped bracts have long, sharp points, and are longer than the ovaries. The flower-spike is one-sided, the crowded, creamy-white flowers all turning in one direction. Some have the ovary twisted; others straight. Flowering July and August.

The name commemorates John Goodyer (died 1652), an English botanist.

### Green-winged Orchis (*Orchis morio*) Plate 69

The Green-winged Orchis flowers in May and June, in meadows and pastures of England and Ireland; it is more abundant in the south than in the north, and in some southern districts it occurs in great numbers. Its two tubers are round or nearly so, the newly formed one will be found at the end of a root half an inch away from the other. Leaves, narrow, lance-shaped, without spots, and the upper ones ensheathe the stem in their full length. The stem varies from six inches to a foot in height; and the flowers are disposed loosely, there being from twelve to twenty in a spike. They are dark purple in colour, the tint varying towards blue and crimson. The sepals and petals are marked in their length by strong parallel stripes of green, and they converge to form an arching hood. The broad lip has three lobes, the side ones sloping downwards; the margins of the lip are toothed, and in the centre there is a pale patch dotted

with purple. The stout, blunt spur, curved slightly upwards, is about equal in length to the twisted ovary.

### Military Orchis (*Orchis militaris*)

The Military Orchis stands one foot to two feet high, with two oval tubers at its base, and large, oblong, concave leaves. The dense flower-spike and the flowers are similar to those of the Lady Orchis, but smaller. The flowers are bright or pale purple, the lip paler; the lip has four lobes, of which the lateral ones are more slender, the middle lobes with their tips curved upwards; the red dots are raised and rough. The short, blunt spur curves downwards. Flowering mid-May to mid-June.

### Dark-winged or Lady Orchis

(*Orchis purpurea*)

Plate 69

*O. purpurea* is now apparently restricted to a few localities in Kent, where it occurs in copses and bushy places about the chalk-hills. Attaining a height of one to three feet. Flowering in May.

Tubers, oval. Leaves, oval-oblong, the lowest ones lying on the ground. The dense flower spike may be four inches in length, with minute bracts hidden among the flowers.

Flowers, large, measuring three-quarters of an inch, including the hood and the tips of the lip. The hood is a dark purple-brown, with darker lines on the exterior. Lip, tinted delicately with pink or lilac and dotted with crimson. Dots raised, consisting really of hairs. Lip, four-lobed, with a deep notch at its toothed end. Side-lobes are long and narrow. The spur, which is only half the length of the ovary, curves sharply downwards.

This species also bears the name of *Orchis fusca*; but Hudson's name—*O. purpurea*—has precedence, and is in general use.

### Monkey Orchis (*Orchis simia*)

Plate 70

The Monkey Orchis is very rare and has been recorded in the past in a few localities in Berkshire, Oxfordshire and Kent. In Kent it has been found more recently.

Smaller and more slender than the Lady and Military Orchids. The lip is pale purple, and the four curved lobes are all very slender, long, and of a deeper tint. It is the uniform length



and narrowness of these that have suggested a likeness to a monkey with long, slender limbs. Flowers, pale purple. Middle of lip and interior of hood dotted with raised, crimson points. The spur is about half the length of the ovary. Flowering in May and June.

### Dwarf Orchis (*Orchis ustulata*) Plate 70

The Dwarf Orchis is found on chalk-hills and in dry pastures in England only, and is rare. Referred to sometimes as the Burnt Orchis, from an idea that the colouring of the hood gives the dense flower-spike the appearance of having been scorched.

Tubers, two, narrow-oval, two-thirds of an inch long. Stem and flowering spike four or five inches high, but has been recorded up to ten inches. Leaves, narrow-oblong, bluish-green and unspotted, about two and a half inches long, the lower shorter, with blunt tips, the upper ones more pointed and clasping the stem entirely. The flower-spike, from thirty to fifty blossoms, is oval, short and dense-flowered, with thin, violet-tinged, whitish bracts. Flowering May to June.

### Early Purple Orchis (*Orchis mascula*) Plate 70

The commonest as well as the earliest of our native Orchids. Found in meadows, pastures and woodlands throughout the British Isles. Flowering April to June.

Tubers, egg-shaped, and close to base of stem. Leaves, narrow-oblong, with blunt points, and marked with purple-black, in broad blotches or small spots.

The stem varies from six inches to one and a half feet. Flowering spike, six to thirty red-purple flowers. Outer sepals of the hood turned upwards. Lip, broad, with spots of darker purple, three lobes, the middle lobe has a notched tip and the side-lobes are sloped down. The stout, blunt spur is longer than the ovary. Occasionally found without any spur.

### Spotted Orchis (*Orchis maculata*) Plate 70

Found in damp places about woods, copses and pastures, on stiff soils and on chalk downs, *O. maculata* has a tuber about one and a half inches wide, with three to five finger-like lobes running downwards. Roots, fleshy, spreading out above the tubers. Stem varies in height from six inches to two feet. Leaves, keeled, usually spotted with dark purple, lowest leaf oval, shorter and blunter than the others; upper leaves narrow and sharply





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pointed, underside silvery-grey. Bracts, green, lowest bract longer than the flowers.

Flowering May to August. Sepals and petals, pale purple. Lip, broad, marked with dots and curved lines of deeper purple, and cut into three lobes, the mid-lobe longest. Spur, straight, nearly as long as the ovary.

### Heath Spotted Orchis (*Orchis elodes*)

There is a strong resemblance between this and *O. maculata*. The resemblance is in the flowers chiefly. Found more in soils which have peat and some acidity; on heaths, and among Sphagnum in bogs. Flowering late April or the beginning of May.

Its tubers are of the same palmate form as those of *O. maculata*. Stem, from four to eight inches high. Lower leaves, broad: all are lance-shaped, keeled and folded lengthwise, arching from the stem, with their lower part clasping it. They are spotted or blotched with dark purple. The short bracts are mostly purplish.

Flower-spike, dense and pyramidal. Flowers, pale purple, varying to bright purple and pure white, with darker fine streaks. Sepals, narrow and either spread or droop. Lip, broad. The middle lobe is very small and much shorter than the others. The spur is more slender and of equal width.

### Broad-Leaved Marsh Orchis (*Orchis latifolia*)

Found chiefly in damp and marshy places throughout the country, this Orchis does not insist upon absolutely wet conditions.

Tubers, palmate. Stem, usually hollow, ranging from six inches to two feet high. Leaves, blue-green, lance-shaped, broader in the middle, with blunt tips, the lowest leaves more oblong. As a rule, they are spotted or have rings of a chocolate tint.

Flower-spike, dense, cylindrical or conical. Flowering May or June. Flowers vary from pale lilac, with darker markings to dark purple. Upper sepal and petals form a hood, side sepals spreading. Lip, broader than long, three-lobed, margins slightly incurved; varies almost to white, the centre with darker lines and spots. The distinct middle lobe has a blunt tip. Spur, shorter than the ovary.



**Dwarf Marsh Orchis** (*Orchis purpurella*)

This smallest of the Marsh Orchids has been recorded from marshes and damp meadows in a few localities of Wales, northern England and Scotland. Tubers, long, tapering. Stem, from four to six inches high, actually hollow, but almost solid. Leaves, lance-shaped, broadest above the base, with a keel, and in the upper part small purple-brown spots, solid or in rings. Flowers, red-purple. Bracts, purplish-brown. Lip is rhomboid in shape. Spur is stout.

Flowering June and July.

**Common Marsh Orchis** (*Orchis praetermissa*)

Growing in marshy and boggy places, often actually in water. Flowering from June to August.

Tubers, palmate. Stem, hollow, from six to eighteen inches high. Leaves, more or less upright, slender-lance-shaped, narrowing from a broad base to sharp tip. Colour, yellow-green to dark green, free from spots. Flower-spike, conical at first, then cylindrical. Bracts, purple-brown. Flowers, crimson-purple or reddish. Hood consists of upper sepal and two petals, the side sepals spreading. Lip, broad, with three lobes, spotted with purple. The curved spur is of equal breadth.

Distributed widely in England; in Scotland and the North it is replaced by the Dwarf Marsh Orchis (*O. purpurella*).

**Early Marsh Orchis** (*Orchis incarnata*) Plate 71

Tubers, palmate. Stem is stout and hollow, varying in height from six to twenty inches. Leaves, very long, elongated lance-shape and of a clean yellowish-green free from spots or other markings, and they take an upward direction. Bracts, similar in shape to the leaves, green, the upper side more or less tinged with purple.

Flower-spike, about five inches long, dense, cylindrical. Flowers vary in tint from flesh, lilac-pink to pale purple, and are about forty in number. Flowering from May to early July.

Flowers have two outer sepals arched and spreading, the upper sepal and the two upper petals converge to form a hood. Lip, three-lobed, the side lobes slanted downwards, the centre spotted and streaked with a darker tint. The ovary is about

half an inch long, and the twist is chiefly at the base. Spur, conical, one-third of an inch, with blunt tip curved forward in front of the ovary. Early Marsh Orchis (see p. 308).

### Lizard Orchis (*Orchis hircina*) Plate 71

*L. O. hircina* is one of the most interesting of the British orchids and very rare. Tubers, two large egg-shaped, flattened at the top, from which two large lance-shaped leaves are produced before the stem appears. Leaves, about five, of similar shape, their lower parts wrapped closely around the stem, all without spots. Stem varies in height between one to three feet or more, ending in a long spike of many flowers.

Flowers consist of three sepals, forming a greenish-grey hood. Two narrow lateral petals are concealed in the upper sepal, inner surfaces of both sepals and petals covered with lines and stippling of minute brown dots. Lip, strap-shaped, two inches long and three mm. wide, except at the base, where it broadens to five mm., margins crisped, ending in two contorted, long and slender, lateral lobes. The main strap of the lip has a divided tip. Coloured a dull greenish-buff, at first with a tinge of mauve, becoming more greenish later. The basal half-inch is white, marked with two or three longitudinal bars of upright, bright violet hairs. Dots of violet around the mouth of the short, blunt spur. Mouth, almost closed by white hairs. Beak, violet, anther covered with minute brown dots. Pollinia two mm. high. Flowering June to August.

### Pyramidal Orchis (*Orchis pyramidalis*) Plate 71

One of the prettiest of our Orchids, *O. pyramidalis* is found chiefly on chalk and limestone in England, and more rarely in Scotland and Ireland. Flowering from June to August. Tubers, roundish, and the slender stem measures from six inches to two feet. Leaves, narrow-lanced-shaped, unspotted, tapering to a sharp point; the lower partially, and the upper entirely, clasping the stem. When the lowest crimson-purple flowers open, the spike is distinctly pyramidal; but when the upper blooms expand, it becomes more oblong. The colour effect is heightened by the purple tint of the long bract below each flower.

Petals and upper sepal form a pointed hood. Lip, broader than long, cut into three oblong lobes. Spur, slender, longer than the ovary.

The beak is placed so low down that the stigmatic surfaces



are above it on each side ; and it projects so far forwards as almost to close the spur.

### Lesser Butterfly Orchis (*Habenaria bifolia*)

The Lesser Butterfly Orchis flowering from May to July, in damp woods and on heaths. Tubers, two, oval, tapering below into a long, fibrous root. From the tuber arise two (occasionally three) large oval leaves, tapering below, blunt above, with two or three very small ones on the furrowed stem. Stem, about a foot high, angular and twisted slightly, upper part forming a loose spike of greenish-white flowers. The broad upper sepal is erect and covers the two slender petals ; the two lateral sepals are broad and spreading, the upper margin has a slight single curve, the lower has a double, stronger curve, so that the sepal closely resembles that of an insect-wing. Lip, strap-shaped, undivided, the edges recurved somewhat. The slightly curved spur is a little more than twice the length of the ovary. Derivation obscure.

### Greater Butterfly Orchis

(*Habenaria chloroleuca*)

Plate 71

With certain modifications very similar to the Lesser Butterfly Orchis. Occurs in damp woods and bushy places, chiefly in upland districts, especially on chalk. Flowering from the latter half of May to August. Stem, one to one and a half feet high. The two leaves at the base are large and oblong, outer leaves very small. The lateral sepals, broad and spreading, white, the downward curving spur is clubbed at the tip.

### Fragrant Orchis (*Gymnadenia conopsea*) Plate 72

The Fragrant Orchis is a generally distributed species in this country, found on banks and hilly pastures, chiefly on chalk or limestone ; flowering in June and July. It varies from six to eighteen inches high. Tubers, oval, lobed. Leaves, narrow-lance-shaped. Flower-spike, long, narrow, purplish. Bracts, longer than the ovary, and edged with purple.

Flowers, rosy-purple and sweet-scented. Upper sepal and two petals form a hood whose sides extend to the lip, lateral sepals spreading widely. Lip has three rounded lobes. Spur, long, slender, curved, twice the length of the ovary.







**Irish Orchis** (*Neotinea intacta*)

In the west of Ireland, in the counties of Clare, Galway and Mayo, alone in the British Islands, the Irish Orchis may be found on the open pastures above the limestone rocks. Flowering May and June.

Tubers, egg-shaped and undivided. Leaves, oblong, spotted or plain. Stem, from four to ten inches high. Flowers, minute pink or purplish. Sepals, darker than the lip. Bracts, shorter than the ovary. Flower-spike, cylindrical and dense. Sepals, sharp-pointed, forming a hood over the column. Lip, divided into three lobes: lateral ones short, mid-lobe broad and oblong. Spur, very short.

**White Fragrant Orchis** (*Gymnadenia albida*) Plate 73

A plant of hilly pastures and mountain-side, flowering from June to August.

The roots are a mere cluster of fleshy, awl-shaped fibres, which sometimes coalesce into a palmate tuber. The lower leaves are blunt oblongs, the upper lance-shaped and sharp-pointed. The stem is from eight inches to a foot high, ending in a dense spike of small yellowish-white, faintly fragrant flowers. Spur, short. Lip, three-lobed, turned up. A northern form is found as far north as Shetland.

**Frog Orchis** (*Habenaria viridis*) Plate 72

Although generally distributed over the British Isles, it must be reckoned among our rarer species, for its occurrence is only local. Found on chalk-downs and in hilly pastures, chiefly on chalky and gravelly soils. Flowering from the middle of May until the end of August. It is quite small and inconspicuous.

Tubers, two, somewhat oval, divided below into two or more long, tapering lobes, with fleshy root-fibres above. Stem, ridged, and varying in height from three inches to a foot. Leaves, narrow-oblong, tapering upwards, unspotted, bases clasping the stem. Bracts, green, longer than the ovary. Sepals and lateral petals form a hood. Beak is divided. Lip, eight mm. long, brownish-green, bordered with purple. Spur, short, two-lobed.

**Green-Man Orchis** (*Aceras anthropophora*) Plate 72

Among our rarer Orchids it is absent from Scotland, Ireland and Wales. In England its distribution is from Yorkshire to



the South Coast, and only where the soil is chalky. Flowering from May to July.

Tubers, oval. Leaves, oblong-lance shaped, the lower with blunt tips, the upper with sharp points, and wrapped entirely around the stem. Stem, slender, varying from eight inches to two feet. Spike, long, supporting from forty to fifty flowers. Sepals and petals, brownish-green. Lip, greenish-yellow. Sepals and petals form a large hood, lined and edged with red. Lip is cut into four very narrow segments, two at the base, the others by division of the tip and twice as long as the sepals. There is no spur. Bracts, quite small and not very noticeable.

Greek, *a*, privative, and *keras*, horn, from the absence of a spur.

### Musk Orchis (*Herminium monorchis*)

This very small Orchis is restricted to the south-east corner of England, and it is there very rare. Unknown in Scotland and Ireland. Found upon grassy slopes of the chalk-hills. Flowering in June and July.

The Musk Orchis has only one small, roundish tuber below the stem; the other (or others) at the extremity of the horizontal fibrous roots. By this means the plant is able to reproduce itself vegetatively, as well as by means of seeds.

Usually two or three smooth, sharp-pointed oval leaves; the lower ends sheathing the base of the stem. Above is a solitary stem-leaf or long bract. The stem varies in height from two to ten inches—usually not more than six inches. The flower-spike may be loose or dense, supporting as many as fifty yellowish-green flowers. Bracts, sharp-pointed, about the same length as the ovary.

Sepals, oval. Petals, narrower and longer with a lobe on each side. Lip, divided into three slender lobes, the middle lobe the longest. There is no spur.

From the Greek, *hermin*, the foot of a bed-post, from the shape of the tubers.

### Bee Orchis (*Ophrys apifera*)

Plate 72

The Bee Orchis often appears in great numbers on the slopes of the chalk and limestone hills, chiefly in eastern and southern counties of England. Absent from Scotland and the extreme north. In Ireland appearing only in the middle and south. Lower leaves short, oblong-lance-shaped, clasping the stem; stem-leaves narrower. Stem varies in height from four to

eighteen inches, but frequently five or six inches only. There are from two to six flowers on a spike, placed well apart, and only two or three are open at one time. Bracts, large and leaf-like. Sepals, pink, broad and spreading, a greenish line down the middle. Petals are small, narrow-oblong, with straight sides and blunt tip, downy, purple or green. The broad lip has five lobes, of which the basal pair are furry. The fifth is a small terminal appendage. The ground colour of the lip is deep yellow, overlaid with patches of purple-brown. Flowering June and July.

From the Greek, *ophrys*, an eyebrow, from the markings of the lip.

### Early Spider Orchis

(*Ophrys sphegodes*)

Plate 74

The area of distribution can be marked on the map by drawing a line connecting Northamptonshire with Suffolk, and extending each end southward to include Dorset and Kent respectively. It is found upon slopes and about copses on chalk and limestone. Flowering from April to early June.

Root-leaves, four or five, about an inch long, oval with a long point. Stem-leaves, longer and narrower. Stem, from four inches to a foot high. Flowers, three or four. Petals and sepals, yellow-green, petals narrow-oblong, greener than sepals and edged with purple. Lip, three-lobed. Upper surface of flower is purple-brown when newly expanded. Seed capsule is an inch long.

### Late Spider Orchis (*Ophrys fuciflora*)

The Late Spider Orchis is regarded by some authorities as a sub-species of the Bee Orchis with which it agrees generally. The more noticeable points of distinction lie in the lip and the petals. The lip exceeds the sepals in length, and the appendage is either straight or curved upwards. The petals are broader at their base and the sides converge to a point.

It is a rare plant and occurs in similar situations on chalk-hills to those favoured by the Bee Orchis; but its distribution, at present, is restricted to a few localities in Kent. It is in flower in June and July.

### Fly Orchis (*Ophrys insectifera*)

Plate 74

The Fly Orchis is fairly abundant in several of the eastern and south-eastern counties of England; very rare in Ireland



and unknown in Scotland. Copses and thickets, always on chalk or limestone. Flowering May to July. Height, between four inches and a foot. Leaves, narrow, oblong. Bracts, twice the length of the ovary. Sepals, yellow-green. Petals, dark purple and downy. Lip, velvety, four-lobed. Colour, dark red-purple, with band of violet across centre.

### Lady's Slipper Orchis (*Cypripedium calceolus*) Plate 74

Very rare and always restricted to dense woods in the limestone districts of Durham, Lancashire and Yorkshire. Stem, from six to eighteen inches. Rootstock, creeping. Leaves, two or three, large, oblong. Bracts, large and leaf-like. Flowers, singly, sometimes two. Flowering May and June. Sepals, red-brown. Petals, an inch to an inch and a half long. Lip, pale yellow and of similar length.

From the Greek, *kupris*, Venus, and *pedilon*, a slipper.

### The Flag Family (*Iridaceae*) Plate 74

CHARACTERS.—Perennial herbs. Rootstocks, tuberous, bulbous or creeping. Leaves, sword-shaped. Flowers, a perianth of six segments in two series, all coloured and petal-like. Stamens, three. Ovary, three-celled, style simple, ending in three stigmas, often dilated. Fruit, a three-sided, three-celled, three-valved capsule.

### Yellow Flag (*Iris pseudacorus*) Frontispiece

Fringing our rivers, ditches and lakes, the Yellow Iris flowers from May to late July. Rootstock, horizontal with numerous fibres. Stem, two feet. Leaves, stiff and erect, pale green. Flowers, proceed from a sheathing bract, large, erect and bright yellow. Sepals, broad and reflexed. Petals, narrow, erect, or curved towards the centre of the flower. Style, broader, arching, spread out and coloured like a petal, with the stigmatic surface near the upturned tips. Beneath this arching style lies the anther, similarly curved, and opening away from the stigma.

There is another British species :

STINKING IRIS, GLADDON, or ROAST-BEEF PLANT (*Iris foetidissima*), with purple sepals, yellow petals and stigmas. Flowers not quite so large as the last. Woods and copses. May to July.





Pl. 75.

1. Daffodil (*Narcissus pseudo-narcissus*), p. 293.

2. Black Bryony (*Tamus communis*), p. 295.

2. Snowdrop (*Galanthus nivalis*), p. 294.

4. Herb Paris (*Paris quadrifolia*), p. 295.



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**Autumn Crocus** (*Crocus nudiflorus*) Plate 74

Flowering in September and October in meadows and pastures, the Autumn Crocus arises from a solid corm clad in a coat of brown, straight fibres. From this corm arises in September a solitary flower bud, wrapped in a delicate spathe, without the intervention of any stem. The lower portion of the flower is a very long and slender silky tube, which dilates upwards and divides into the six bright purple perianth lobes which show no distinction between sepals and petals, except that three are outer in the bud and three inner. To the lower face of these outer lobes the three stamens are attached. The ovary is down below, close to the corm, and the thread-like style reaches up to the opening of the flowers, where it divides into three wedge-shaped, orange stigmas with lacerated edges. Though the pale orange anthers stand on the same level as the stigmas, they open to discharge their pollen outwardly, and so give the stigmas a chance of fertilization by pollen brought from another flower.

In the following March the leaves appear above ground, and continually lengthen until they have made sufficient new material to form a new corm and feed the capsule full of small red seeds. The leaves wither, the capsule opens and scatters the seeds.

**The Daffodil Family** (*Amaryllidaceae*) Plate 75

CHARACTERS.—Perennial herbs. Roots, bulbous. Leaves, all radical, long, slender, straight-sided. Flowers, at first enclosed in large dry bracts. Perianth of six parts, united or free, in two series. Stamens, six, attached to the tube or segments. Ovary, egg-shaped or round, three-celled; style, thread-like or columnar, stigmas, one to three. Fruit, a three-celled, three-valved capsule.

**Daffodil** (*Narcissus pseudo-narcissus*) Plate 75

The Daffodil as a wild plant in England is extremely local, but where it occurs it is usually in great profusion. In Scotland and Ireland it may also be found, but not truly wild; it is only naturalized. The rootstock is in the form of a bulb, and the somewhat flattened flower-scape leafless, though the flowers are first enveloped in a dry skin-like bract. The flower consists of a perianth of six coloured floral leaves, without distinction between sepals and petals, and attached above the ovary. Flowering in March and April.



The few leaves of the Daffodil spring directly from the rootstock; they are nearly flat, and of a blue-green hue. Only one flower appears on the scape, of which the perianth segments are clear pale yellow, but from the centre is produced a long tubular crown of a golden hue, with an uneven toothed margin. Within this tube are the six stamens, and the long style with its three-lobed stigma.

Derivation mythological.

### Snowdrop (*Galanthus nivalis*)

Plate 75

It is generally agreed that the Snowdrop is not indigenous to this country, although it is found thoroughly naturalized and quite wild in orchards, copses and meadows.

The Snowdrop belongs to the (in this country) little order of Amaryllids. Its rootstock takes the form of a little brown bulb, and from this appears, in the very earliest days of the year, a solitary pair of long, straight-sided, narrow leaves, of sea-green hue, and slightly keeled on the outer surface. A little later there comes up direct from the bulb an unbranched flower-stem bearing a large bract, from which issues the solitary flower on a thin, bending stalk. The three spreading sepals are pure white, and the three smaller petals are also white, but with a patch of green near the notched upper edge of each, and several green lines on the inner surfaces. There are six stamens, and a slender style. The flower remains open from about ten till four. The ovary is inferior. Flowering from January to March. From the Greek, *gala*, milk, and *anthos*, flower.

The SNOWFLAKES (*Leucojum*) are very closely allied to *Galanthus*. There is no distinction in form or size between petals and sepals, as in the SNOWDROP; nor in colour, for each is pure white, with a small green patch near the tip. The flowers, instead of being solitary, are produced from the spathe in a cluster of from two to six. The leaves of *L. aestivum*, the SUMMER SNOWFLAKE, appear in the winter, but the flowers not till May; both flowers and leaves of the smaller *L. vernal*, or SPRING SNOWFLAKE, appear about March. The latter species bears only one or two flowers. *L. vernal* has only been found in copses in Dorset, but *L. aestivum* is a plant of osier holts and wet meadows between Suffolk, Oxford, Kent and Dorset. The name is Greek, signifying white-violet, from the words *leukos* and *ion*.

**The Yam Family (*Dioscoreaceae*)** Plate 75

**CHARACTERS.**—Herbs.—Perennial, climbing. Rootstock, tuberous. Stems, twining from right to left, with alternate leaves. Flowers, small, greenish, in racemes; sexes in separate flowers; the female flower superior. Perianth, regular, of six segments in two series. Stamens, six, attached to perianth-segments. Ovary, three-celled, styles three, short. Fruit, usually three-sided and three-celled, but in the British representative numerous scarlet berries.

**Black Bryony (*Tamus communis*)** Plate 75

The climbing habit of *Tamus* is by twining, in the same fashion as the Honeysuckle and the Bindweeds. Rootstock, large, fleshy, black on the outside. Stem, long, angular, ascending to a considerable height over hedges and bushes. Leaves, large, heart-shaped, with entire edges and shiny surface, four inches long, on long stalks; green, but turning in early autumn to bronze. The yellow-green flowers of each sex are very small, and produced by different plants, which are called *dioecious*. The males are in slender, branched sprays from the axils of the leaves; the females are in shorter, curved sprays. The male flower consists of a six-parted perianth, with as many stamens attached; while the female flower contains a three-celled ovary with three styles, the stigmas lobed. The fruit is a soft, oblong berry, that becomes bright red when ripe. Flowering May and June. Not found north of Cumberland, and very rare in Ireland. The etymology of the name *Tamus* is involved in obscurity.

**The Lily Family (*Liliaceae*)** Plates 75-77

**CHARACTERS.**—Herbs or shrubs, perennial. Rootstock, bulbous or creeping. Flowers, usually complete, occasionally the sexes separate. Perianth of six segments in two series (segments rarely four, eight, or ten), petal-like. Stamens, six, attached to the perianth or springing from beneath the ovary. Ovary, three-celled; styles, one or three; stigma, simple or three-lobed. Fruit, berry, usually three-celled.

**Herb Paris (*Paris quadrifolia*)** Plate 75

The only British representative of the genus. Rootstock, stout, creeping. Stem, rounded, about a foot in height, bearing a single whorl of leaves and a solitary flower. Leaves, oval, but pointed at each end, almost always four in number, arranged in



two opposite pairs on the same level. Rarely there are only three, or there may be as many as five or eight. From the centre of the leaves the flower-stalk rises. Flowers, about an inch and a half across, consisting of four green sepals, and a like number of yellow petals. Stamens, eight (sometimes twelve). Ovary, four-celled, developing into a bluish-black berry, which splits irregularly to discharge its black seeds. Flowering May and June.

From the Latin, *par, paris*, equal, in allusion to the four-parted regularity of this species.

### Butcher's Broom (*Ruscus aculeatus*) Plate 76

Butcher's Broom must be searched for in woods, copses and under trees on commons in the south and west of England. Rootstock, white, creeping, with "eyes," from which arise the stems, at first pale, almost white, and tender, but soon harden and become tough and evergreen. They reach a height of two or three feet, with many leaf-like branches, short-pointed and stiff. The greenish-white flowers are a quarter of an inch across, produced from the centre of the branch, and consist of a six-parted perianth. The position of the future flower is marked by a tiny bract when the branches of the newly risen stem are still soft and pale. The anther-bearing (male) flowers are borne by a different plant from the pistil-bearing (female) flowers, or on a separate stem from the same rootstock. Two male buds—occasionally three—are produced in the little pouch of the branch, and one appears on its foot-stalk, discharges its pollen, drops off, and is succeeded by the other. The stamens are united by their edges, and of a violet-purple colour. The female flowers are succeeded by bright red berries, about half an inch in diameter. Flowering from mid-November until well on in April. Its natural distribution in this country is bounded on the north by Norfolk, Leicester and South Wales.

*Ruscum*, the Latin name of the plant.

### Snake's-head, or Fritillary

(*Fritillaria meleagris*)

Plate 76

A plant of wet meadows and pastures, that must be described as rare. The bulb is small, composed of only two or three thick, fleshy scales; the leaves are very narrow, six or eight inches long. The flower-stem is from a foot to a foot and a half long, leafy, with a solitary flower, or occasionally two. These



flowers, which appear in May, are much like a tulip in shape, but drooping. The six floral leaves are purple flecked with oval patches of a paler tint. The six stamens have yellow anthers.

This is the only species occurring in this country. Its range is from Norfolk and Stafford to Somerset and Hants.

From the Latin, *fritillus*, a dice-box, though the allusion is really to the chequered board upon which the dice were thrown.

### Star of Bethlehem (*Ornithogalum umbellatum*) Plate 76

A naturalized form and distinguished as the Common Star of Bethlehem, these plants have nearly all the characters of the Squills, but whereas they have usually blue or purple flowers, those of *Ornithogalum* are white, open and persistent. Otherwise there is the same kind of coated bulb, narrow leaves all radical, withered-looking bracts, perianth of six floral leaves, six stamens with flattened filaments, and a three-valved fruit.

COMMON STAR OF BETHLEHEM (*O. umbellatum*) has from six to eight concave leaves, each with a white central stripe springing from a bulb that is about an inch in length, producing smaller bulbs all round. The flower-stem is eight to ten inches high, bearing from six to ten flowers. Blossoms from an inch to an inch and a half across, the floral-leaves narrow, with a green midrib on the back. Flowers May and June, in woods and meadows.

SPIKED STAR OF B. (*O. pyrenaicum*) has a bulb two inches long with concave, glaucous leaves, withering when the flowers have come. Flower-stem stout and as much as two feet in length, the flowers in a raceme. Flowers, one inch across, greenish, with a white margin to the floral leaves on the inner side. Flowering June and July. This is the true native, and is found in woods and copses locally in the counties of Somerset, Wilts, Beds, Berks and Sussex.

DROOPING STAR OF B. (*O. nutans*). Much more local than the last, being confined to the districts between Yorkshire, Durham and Hereford. It has a two-inch bulb, leaves one to two feet, concave, glaucous, with a white stripe, a two-foot flower-stem. Flowers few, white with green midrib, as much as one to one inch and a half across, in a raceme. Flowering April and May.

From the Greek, *ornithos*, a bird, and *gala* milk.

## Bluebell or Wild Hyacinth

(*Endymion nonscriptum*)

Plate 76

In the spring its leaves break through the earth and lay in rosette fashion close to the surface, leaving a circular tube through which the spike of pale unopened buds soon arises.

Bulb, roundish, white, somewhat less than an inch in diameter. The leaves have parallel sides, and before the plant has done flowering they have reached the length of a foot or more, whilst the flower-stalk is nearly as long again. Before the flowers open the buds are all erect, but these gradually assume a drooping attitude; though when the seeds are ripening the capsule again becomes erect.

The flower is a blue elongated bell, showing no distinction between calyx and corolla. It consists of six floral leaves, joined together at their bases, the free portions curling back and disclosing six yellow anthers. The ovary is surmounted by the thread-like style, ending in a minute stigma. The capsule is three-celled, and when ripe each cell splits down the side to release the shining black seeds.

The Genus *Scilla*, in which Blue-bell was included formerly, belongs to the Natural Order Liliaceae; its name is from the Greek *Skyllo*, to annoy, in allusion to the bulbs being poisonous.

There are two native species:

**VERNAL SQUILL** (*S. verna*). Flower-scapes, one or two, not so long as leaves. Like Bluebell, it has a couple of long bracts at the base of the pedicels, as the short stalks are called, which connect the flowers with the tall scape. This is a rare plant, occurring only in rocky pastures near the West Coast from Flint to Devon; also Ayr and Berwick to Shetland, and in the east and north-east of Ireland. April and May.

**AUTUMNAL SQUILL** (*S. autumnalis*) throws up several flower-scapes before the leaves. Flowers, reddish-purple, not drooping, but spreading or erect; July to September in dry pastures from Gloucester to Cornwall, from Middlesex to Kent. No bracts.

## Ramsons (*Allium ursinum*)

Plate 77

Ramsons is otherwise known as the Broad-leaved Garlic a strong-smelling, pungent plant with a bulb like an Onion in the ground. Leaves, lance-shaped, six or eight inches long. Leaf-stalks sheathe the base of the flower-stem. Flower-stem is three-sided, and supports an umbel of about twelve pure white starry



blossoms, giving forth the characteristic odour of garlic. When the flower-stem first emerges from amid the radical leaves the flower-buds are all wrapped up in a two-leaved envelope. When the flowers are open these leaves will be found immediately below the umbel. There is no distinction between calyx and corolla; the two combined consists of six segments, which spread widely. There are six stamens, which mature and shed their pollen in succession before the stigma is ripe. Found in damp woods and shady hedgerows, often in great communities. Flowering from April to June.

There are eight other British species, most of them rare or local. The least rare are the following:

**CROW GARLIC** (*A. vineale*). With a small bulb and tubular leaves, one or two feet long, flattened or grooved towards their extremity. The spathe in this species is single. The flower head appears after the leaves have faded, and usually consists of a crowd of small green or purple bulbils, from amid which rise a few pink or greenish flowers. These bulbils are about a quarter of an inch across when fully developed, and serve in lieu of seeds for propagation. It is a plant of fields and dry wastes, where it flowers in June and July.

**FIELD GARLIC** (*A. oleraceum*). Bulb small; leaves slender, half rounded, two feet long, roughly ribbed, and flattened towards the end. Spathes, two. Flower-head not crowded; flowers pink or greenish-brown, springing from among the bulbils. Borders of fields in southern counties and in east of Scotland; July.

The name *allium* is the old Latin for garlic.

### **Bog Asphodel** (*Nartheclum ossifragum*) Plate 77

Rootstock, long, creeping. Stiff, sword-shaped leaves, with sharp, flat points and distinct ribs, usually four or five inches long, but may be as much as a foot. They are all radical, except that occasionally there may be one or two smaller ones half-clasping the otherwise leafless stems. Flowers, golden-yellow, arranged in a raceme consisting of six perianth-segments, green outside and yellow within, and they remain attached after the fruit has ripened. There are six stamens, whose awl-shaped filaments are white and hairy, the anthers orange. The ovary is narrow and triangular, with a short style; it develops into a three-sided red capsule. Flowering in July and August. Common on wet moors and in boggy hollows on hill-sides. It is



widely distributed, vertically as well as horizontally, for it occurs at an elevation of over three thousand feet in the Highlands. It is the only species.

From the Greek *narthekion*, a rod or cane, which can only refer to the flower-stem.

### Meadow Saffron (*Colchicum autumnale*) Plate 77

Rootstock, large tuberous, covered with red-brown scales. From this in March arise the lance-shaped leaves, often a foot long and an inch wide. These have completed their work and disappeared from view by the time the flowers begin to appear in late summer and autumn. Several appear in succession from the same root, and they are pale rosy-purple in tint. The tube of the flower is very long and slender, easily collapsing with the weight of the funnel-shaped upper portion, which consists of six segments. The ovary is at the bottom of the tube underground, and sends up *three* thread-like styles. These are mature, and have been pollinated by insects coming from older flowers in quest of the nectar, before the six anthers shed their pollen. These burst inwards. The spindle-shaped seed vessel remains underground through the winter, and comes up with the leaves in spring to scatter its pale brown seeds.

Its natural distribution is local in the area bounded by Westmorland and Durham in the north to Somerset and Sussex in the south; also in Ireland. In parts of Scotland it has become naturalized.

The name is derived from Colchis in Asia, which was celebrated in classical times for its production of poisonous herbs.

### The Rush Family (*Juncaceae*) Plates 77, 78

CHARACTERS.—Herbs, mostly perennial, with creeping scaly rootstock. Stems, erect, usually unbranched, and filled with pith. Leaves, slender, flat, or rounded, sometimes reduced to scales that sheathe the stem. Flowers, small, regular, green or brown, in cymes, with bracteoles. Perianth, inferior, segments six in two series, dry or leathery. Stamens, six or three, attached to bases of segments. Ovary, one- to three-celled; style, short or absent; stigmas, three, thread-like. Fruit, a one- to three-celled capsule with three valves.

### Common Rush (*Juncus effusus*) Plate 78

In the Common Rush (*J. effusus*) the leaves are all reduced to sheaths round the lower portion of the stems. The stems



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are densely matted in a circular tuft; they are cylindrical, but stuffed with a continuous pure white pith. Externally they are smooth and grow to a height of three feet. The flowers are clustered in cymes, which are, in this species, never produced at the end of the stem, but at the side, about half-way up. They consist of a perianth of six segments, the three outer green with a thickened midrib, the inner brown and semi-transparent. There are but three stamens, attached to the perianth segments. Flowering in July and August. Found in moist places on heaths, in fields and wastes everywhere.

From the Latin, *jungo*, to join, in allusion to its use for tying bunches of herbs and flowers.

### Hairy Wood-rush (*Luzula vernalis*) Plate 77

The Wood-rushes (*Luzula*) are all perennial plants. Their leaves are like the blades of short grass, the edges fringed with long white silky hairs. The floral leaves are six in number, in two series. Stamens, six. The ovary is broad, narrowing to the summit, upon which is the style, ending in three long stigmas covered with minute raised points. The fruit is a one-celled, three-valved capsule, containing three seeds at the bottom. Flowers are chestnut-brown, with the perianth segments shorter than the blunt-topped capsule, and pointed at the tips; clustered in twos and threes and grouped in lax cymes. The radical leaves are broad (quarter of an inch), soft, and sparingly hairy. It grows in woods and shady places, flowering from March to May. The other members of the genus are:

**GREAT HAIRY WOOD-RUSH** (*L. maxima*), a much larger plant, the leaves sometimes half an inch broad and a foot long, sparsely hairy. Flowers, paler, three or four clustered; cymes, large, compound. Woods and heaths. May and June.

**NARROW-LEAVED WOOD-RUSH** (*L. forsteri*). Similar to *L. vernalis*, but more slender and taller. Capsule, pointed. Shady places on chalk or gravel, nor farther north than South Wales and Oxford. April to June.

**FIELD WOOD-RUSH** (*L. campestris*). Rootstock, creeping. Leaves, very hairy. Perianth segments longer than the broad, rounded and spiked capsule. Flowers in dense clusters of three or four, in short cymes. Heaths and pastures. April to June.

**SPIKED MOUNTAIN WOOD-RUSH** (*L. spicata*). This and the next are purely mountain species, restricted to an altitude of

1,000 to over 4,000 feet for *spicata*, and from 3,000 to over 4,000 for *arcuata*. The leaves are narrow, leathery, and the hairiness is confined to the lower end. Flowers, smaller than the silvery, chaffy, awned scales (*bracteoles*) below them. The perianth segments end in awns, and are longer than the abruptly-pointed capsule. The cymes are densely flowered, drooping and spike-like. Flowers in July.

**CURVED MOUNTAIN WOOD-RUSH** (*L. arcuata*). The smallest, rarest, and most distinct of our native species. The stems do not exceed about four inches, and are proportionately stout. Rootstock, creeping. Leaves, short, narrow, leathery, slightly hairy. Flowers, dark brown, three to five in a cluster, in lax cymes; the perianth segments extended to a point. Bracteoles, pointed, not awned, not silvery. Mountains in Scotland only. July.

From the Latin, *luciola*, a glow-worm.

## The Bulrush Family (*Cyperaceae*) Plate 78

**CHARACTERS.**—Herbs, rush-like, usually perennial. Stems, solid, often three-sided. Leaves, long, slender, with tubular sheaths. Flowers, one- or two-sexual in small bracts, or glumes arranged in spikelets. Glumes, concave, the lower one in each spikelet often empty. Perianth, when present, of three, six, or more scales or bristles. Stamens, one to six from below the ovary; filaments flat, anthers projecting from the spikelets. Ovary, one-celled, surrounded by one or two little bracts; style, one, protruded from the spikelet, with two or three thread-like stigmas. Fruit, small, compressed or three-sided.

### **Bulrush** (*Scirpus lacustris*) Plate 78

The Bulrush is allied to the Cotton-grass and the Sedges. Its thick, spongy stems are in most cases leafless. When the leaves occur they vary according to situation. In still water they are short and flat, with a keel; in flowing water they are long and strap-like. The stems are nearly an inch in diameter, and as much as eight feet high, round, sheathed at the base. The flowers are in clustered cymes, with stout, straight branches, each bearing a cluster of two to six red-brown cylindrical spikelets. The glumes overlap one another round a central stalk; they are two-lobed, with a little awn, fringed with fine hairs, and, with the exception of the two lowest, which are empty, they each contain three stamens and an ovary, with a twice or thrice-cleft style. The perianth is represented by four or six bristles. Flowering July and August.

From the Latin, *Scirpus*, a rush.



**Cotton-grass** (*Eriophorum angustifolium*) Plate 78

*Eriophorum* is not strictly a grass, but a sedge. It is a rush-like perennial herb, with a short rootstock from which the bluntly triangular stems arise to a height of a foot or more, each smooth, flat leaf enfolding the stem and the next younger leaf by its lower portion. From the centre the flowering stem emerges with several dull greyish, scaly bodies at the top. These are the flower-clusters, and their arrangement is somewhat similar to the flowers of grasses. The overlapping scales are *glumes*, and all except the lowest two or three contain a flower, the anthers and stigmas protruding. Calyx and corolla are represented in these flowers by a number of fine bristles, which lengthen as the flower matures and become the long silky streamers of the fruit. There are three stamens, a one-celled ovary surmounted by a long style that branches at the top into three feathery stigmas. As the solitary germ in the ovary develops into the mature nut, the spike becomes transformed into a tuft of silken filaments an inch and a half to two inches in length. Flowering May and June. Bogs and wet moors.

Other species are :

**SLENDER COTTON-GRASS** (*E. gracile*), similar to the type, but the stems longer and more slender, the leaves short, very narrow, sharply triangular and channelled. The glumes broad, blunt, brown, and ribbed. This is a very rare species, and has been recorded only from the bogs of Surrey, Hants, and Yorks; flowering in June and July.

**HARE'S-TAIL COTTON-GRASS** (*E. vaginatum*). Stems, many, round below, but passing into triangular above, smooth, with several leafless sheaths. Leaves, thread-like, triangular, very short. Glumes, olive, nearly transparent. Bristles, very numerous. Flowering April and May.

From the Greek, *erion*, wool, and *phora*, bearing; suggested by the woolly heads.

**False Cyperus** (*Carex pseudo-cyperus*) Plate 78

The False Cyperus is plentiful in many localities, frequent in Scotland, south of the Caledonian Canal, but rather rare in England and Ireland. Wet marshes and ditches. Flowering in June.

The Sedges (*Carex*) are all perennial herbs. They are related to the Bulrush (*Scirpus*), and their floral arrangements are very



similar. We have the same inclusion of many flowers in a spikelet, but some are male and some female, instead of the two sexes being in one flower. In the False Cyperus this is carried a stage further, the slightly drooping upper spikelet being male, whilst the four stouter hanging spikelets are female. The male flowers have no other covering than the glumes, but the females are enclosed in a bottle-shaped sac, the *perigynium*. The glumes end in long, toothed points which curve outwardly and give a distinctive appearance to the catkin-like spikelet.

The three-sided and rough stem grows to a height of three feet. The long, flat, strap-shaped leaves are also rough, and measure about half an inch in width.

From the Greek, *Keiro*, to cut, from the sharpness of the edges of the leaves.

### The Grass Family (*Gramineae*)      Plates 79, 80

CHARACTERS.—Slender herbs, mostly tufted. Stems, cylindrical or compressed, jointed, usually hollow between the joints. Leaves, slender, alternate, the lower part forming a sheath round the stem or younger leaves. Flowers, in glumes and spikelets: a spikelet is usually composed of two empty glumes, within which is one or more flowering glumes. The spikelets are arranged in spikes, racemes, or panicles. The flowering glumes are boat-shaped, containing a one- or two-sexual flower, and a flat scale called a *palea*, with turned-in edges. The perianth is usually of two minute scales, opposite the *palea*. Stamens, usually three (occasionally one, two, six, or more); filaments, hair-like, anthers hinged in the middle. Ovary, one-celled; stigmas, usually two, feathery. Fruit, a membranous utricle, containing one seed.

### Vernal Grass (*Anthoxanthum odoratum*)      Plate 79

The Sweet Vernal-grass is singular among grasses in the fact that it possesses but two stamens. The panicle is spike-like, with short branches. The spikelets are one-flowered. The outer glumes are four in number, one flowering glume, a *palea*, but no lodicules. The species is abundant in most meadows. It is a perennial, and flowers in May and June. It should be noted that the form which grows in meadows has purple anthers, but when this grass grows in woods it has yellow anthers. There is an introduced species, the Annual Vernal-grass (*A. puelii*), from Southern Europe and the Mediterranean region, that has become naturalized in sandy pastures from Roxburgh to Devon and Hants. It is a more slender, much-branched species, with many



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bent stems from the root, narrow leaves, a loose panicle, stalked spikelets, and longer awns.

The name is from two Greek words, signifying yellow blossoms.

## Cat's-tail or Timothy Grass

(*Phleum pratense*)

Plate 79

*P. pratense* is one of the most valuable of our grasses, and is one of the earliest and most abundant species. The stems are slightly creeping before they rise, and are sometimes tuberous. The inflorescence is a crowded spike-like panicle. The spikelets are one-flowered. The outer glumes are boat-shaped, with a long awn and stout green keel, fringed with stiff hairs. The flowering glume is glassy, and entirely included within the outer ones, from which, however, the long stamens and feathery stigmas protrude. The anthers are yellow and purple. The plant is perennial, and flowers from June to September. The name is from the Greek, *Phleos*, for the plant. There are three other native species, but they are all more or less local:

**PURPLE-STALKED CAT'S-TAIL** (*P. phleoides*) has a cylindrical panicle, with narrow lance-shaped glumes, ending in a hard point. Stem nearly leafless above. A rare plant of chalky soils. July. Annual

**SEASIDE CAT'S-TAIL** (*P. arenarium*). Panicle, oblong, stouter above than below. Glumes, lance-shaped, tapering to a sharp point; keel, fringed above. Anthers, very small. June and July on sandy soils, chiefly near the sea. Annual.

**ALPINE CAT'S-TAIL** (*P. alpinum*). Rootstock, creeping; leaf-sheaths, inflated; panicle, egg-shaped, bristly. Glumes, ending in a long, rough awn; keel, fringed. July, on wet alpine moors in Perthshire, Forfarshire, and Aberdeenshire. Perennial.

## Meadow Foxtail Grass (*Alopecurus pratensis*)

Plate 79

The Meadow Foxtail bears a general resemblance to Timothy, but from which it differs in having an awned flowering glume, and no inner palea or scales. Its cylindrical panicle is yellowish-green, with silvery hairs, the branches bearing three to six spikelets. It is a perennial plant, with creeping rootstock. It forms a valuable portion of good pastures, the herbage being very nutritive. It flowers in May and June. The name is Greek, signifying Foxtail. There are three other native species in the genus:

**SLENDER FOXTAIL or BLACK GRASS** (*A. agrestis*). Annual. Panicle, slender, often purplish; branches, hairy, with two spikelets. A wayside weed. May to October.

**ALPINE FOXTAIL** (*A. alpinus*). Perennial. Panicle, ovate, short, three-quarters of an inch, branches with four to six spikelets. Anthers, yellow. Rare, near alpine streams, from 2,100 to 3,600 feet. Scotland. July and August.

**FLOATING FOXTAIL** (*A. geniculatus*). Perennial. Stems, procumbent and rooting. Panicle, dense, slender. Branches with one spikelet. Anthers, purplish. Pools and wet places. May to August. A sub-species of this (*A. bulbosus*) occurs rarely in southern salt marshes, and has the lowest knots on the stem enlarged into oval tubers.

### Hare's-tail Grass (*Lagurus ovalus*) Plate 79

**HARES'S-TAIL** is an annual grass with broad, short, flat leaves, and several down stems, six to ten inches long, ending in a dense, hairy, egg-shaped head of white spikelets, an inch and a half long and half as broad. Each spikelet consists of two large empty glumes, and a smaller flowering glume. The empty glumes end in slender feathery points; the flowering glume has two short awns, and between them a much longer, bent, and twisted one. There are three stamens. Flowering in June, it grows as a native in sandy places in Guernsey, but also occurs near Saffron Walden, where it has become naturalized.

It is the only species of the genus. From the Greek, *lagos*, a hare, and *oura*, a tail.

### Marram (*Ammophila arundinacea*) Plate 80

Frequent on all British sea coasts, Marram sends its stout, long rootstock underneath the surface, spreading its fibrous roots down and around, and sending up rigid stems three or four feet high.

The leaves are long, stiff, and with one side rolled within the other. The flower-panicle is rounded, four or five inches long, of a whitish-green, with yellow anthers hanging out. The spikelets comprised in it are erect on rough footstalks. The two empty glumes are stiff, sharp-pointed, and narrow, with a rough keel, and the flowering glumes are like them, but have a tuft of silky hairs at their base. Flowering in July, it may be found on almost any part of our coast where there are sand-hills. Also known as *A. arenaria*.

There is another native species :

**BALTIC SEA-REED** (*A. ballica*), restricted in range to the Norfolk



coast, Ross Links in Northumberland, and Holy Isle. It is similar to the common species from which it is distinguished by its panicle being more lance-shaped than cylindrical, and the spikelets less compact. The glumes, too, are more acute and the hairs shorter.

From the Greek, *ammos*, sand, and *philo*, lover.

### Quake or Totter Grass (*Briza media*) Plate 80

The Totter Grass differs so strongly from other grasses that minute description is unnecessary. The inflorescence is a very loose pyramidal panicle, due to the long and hair-like stalks upon which the shining purple spikelets are swung. The empty glumes are two; flowering glumes six to eight. The stem creeps below the surface, and the leaves are flat. The plant is perennial. Flowering in June.

There is another species, the Small Quake Grass (*B. minor*), that is annual and not so common. Found chiefly in sandy fields between Cornwall and Hampshire; also in the neighbourhood of Cork and in the Channel Islands. It is much smaller than *B. media*, and has tufted stems; it flowers in July. A third species (*B. maxima*) with few very large spikelets has become naturalized in Guernsey.

From the Greek, *Briza*, applied to some kind of corn.

### Great Reed (*Phragmites communis*) Plate 80

The Reed is our giant grass, often towering to a height of ten feet, and forming extensive "reed-beds" in fens, and on the margins of lakes and rivers. There is a long, creeping rootstock, jointed like a length of bamboo, and from which the thick, round stems shoot straight up. The leaves are from half to one inch wide, flat, stiff, and sharp-pointed, their edges bristly, and the undersides glaucous. The panicle is very large and soft (from one to one and a half feet in length), somewhat oval in outline, dense though soft and nodding, of a purple hue. The spikelets are half round, glossy, containing three flowers or five, and two short, unequal, empty glumes. The flowering glumes—except the lowest in each spikelet—are surrounded by long silky hairs as long as the glumes. Flowering in July and August, the plant will be found generally distributed throughout the three kingdoms. This is the only species.

From the Greek, *phragma*, a fence or enclosure.



### Early Marsh Orchis (*Orchis occidentalis*)

Recently distinguished in the west of Ireland, where it is widely spread, and also in the outer Hebrides and the extreme north of Scotland. Usually a dwarf plant like *O. purpurella*, but with purply-blotched foliage and a distinctly three-lobed lip. It flowers much earlier than the other species—from the middle of May to middle of June.

# CLASSIFIED LIST OF NATURAL ORDERS (FAMILIES), GENERA AND SPECIES DESCRIBED IN THIS WORK

## Order Ranunculaceae

- CLEMATIS** vitalba, 65  
**THALICTRUM** flavum, 66 ;  
 minus, 66 ; majus, 66 ;  
 alpinum, 66  
**ANEMONE** nemorosa, 67 ; pulsa-  
 tilla, 67 ; apennina, 67 ;  
 ranunculoides, 67  
**ADONIS** annua, 67  
**RANUNCULUS** acris, 68 ; repens,  
 68 ; bulbosus, 68 ; sardous,  
 68 ; arvensis, 69 ; parviflorus,  
 69 ; ficaria, 69 ; flammula,  
 69 ; lingua, 70 ; ophio-  
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 peltatus, 71  
**MYOSURUS** minimus, 71  
**CALTHA** palustris, 71  
**TROLLIUS** europaeus, 72  
**HELLEBORUS** foetidus, 72 ; viri-  
 dis, 73  
**AQUILEGIA** vulgaris, 73

## Order Berberidaceae

- BERBERIS** vulgaris, 74

## Order Nymphaeaceae

- NYMPHAEA** luteum, 74  
**CASTALIA** alba, 75

## Order Papaveraceae

- PAPAVER** rhoeas, 75 ; hybridum,  
 76 ; argemone, 76 ; dubium,  
 76 ; somniferum, 76  
**MECONOPSIS** cambrica, 76  
**GLAUCIUM** flavum, 77  
**CHELIDONIUM** majus, 77

## Order Fumariaceae

- FUMARIA** officinalis, 78  
**CORYDALIS** claviculata, 78 ;  
 lutea, 79 ; bulbosa, 79

## Order Cruciferae

- CHEIRANTHUS** cheiri, 80  
**BARBAREA** vulgaris, 80  
**NASTURTIIUM** officinale, 81 ; syl-  
 vestre, 81 ; palustre, 81

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 COCHLEARIA officinalis, 85 ; alpina, 86 ; danica, 86 ; anglica, 86 ; groenlandica, 86  
 DRABA verna, 86 ; incana, 86  
 SUBULARIA aquatica, 87  
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 LEPIDIUM campestre, 88 ; heterophyllum, 88 ; latifolium, 88  
 ISATIS tinctoria, 89  
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### Order Resedaceae

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### Order Cistaceae

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### Order Violaceae

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### Order Polygalaceae

POLYGALA vulgaris, 93 ; calcarea, 93

### Order Caryophyllaceae

DIANTHUS deltoides, 94 ; armeria, 94 ; prolifer, 94 ; glaucus, 95  
 SILENE cucubalus, 95 ; maritima, 95 ; angelica, 95 ; acaulis, 95 ; nutans, 95 ; noctiflora, 96  
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 SAGINA procumbens, 98 ; apetalata, 98 ; maritima, 98 ; subulata, 98 ; nodosa, 98  
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**SPERGULARIA** rubra, 101; marginata, 101; rupicola, 101; salina, 102

**SPERGULA** arvensis, 102

#### Order Tamaricaceae

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#### Order Hypericaceae

**HYPERICUM** perforatum, 103; tetrapterum, 103; humifusum, 103; pulchrum, 104; hirsutum, 104; androsaemum, 104

#### Order Linaceae

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#### Order Malvaceae

**LAVATERA** arborea, 105

**MALVA** sylvestris, 106; rotundifolia, 106; moschatus, 106

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#### Order Geraniaceae

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**MELILOTUS** altissima, 114; officinalis, 114; alba, 114

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**ONOBRYCHIS** viciaefolia, 118

**VICIA** cracca, 118; sepium, 118; tetrasperma, 119; hirsuta, 119; sylvatica, 119; angustifolia, 119; lathyroides, 119; bithynica, 119, lutea, 119; orobus, 119

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**POTERIUM** sanguisorba, 127; officinale, 128

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### Order Saxifragaceae

**SAXIFRAGA** tridactylites, 136; granulata, 137; hypnoides, 137

**CHRYSOSPLENIUM** oppositifolium, 137; alternifolium, 138

**PARNASSIA** palustris, 138

### Order Droseraceae

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- HYDROCOTYLE** vulgaris, 141  
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**APIUM** graveolens, 142 ; nodi-  
     florum, 142 ; inundatum, 143  
**AEGOPODIUM** podagraria, 143  
**CARUM** bulbocastanum, 143  
**PIMPINELLA** saxifraga, 143 ;  
     major, 144  
**BUPLEURUM** rotundifolium, 144  
**OENANTHE** fistulosa, 145 ; lache-  
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     pinelloides, 145 ; silaifolia,  
     146 ; phellandrium, 146  
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**FOENICULUM** vulgare, 146  
**CRITHMUM** maritimum, 147  
**ANGELICA** sylvestris, 147  
**PASTINACA** sativa, 148  
**HERACLEUM** sphondylium, 148  
**CONOPODIUM** majus, 149  
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# LIST OF ALTERNATIVE NAMES ADOPTED BY VARIOUS AUTHORITIES FOR THE FOLLOWING GENERA AND SPECIES

L. = Linnaeus

PAGE	ENGLISH AND LATIN NAMES AS GIVEN IN THIS WORK	REVISED LATIN NAMES WITH AUTHORITIES
74	Yellow Water-lily <i>Nymphaea luteum</i>	<i>Nuphar luteum</i> , Smith
75	White Water-lily <i>Castalia alba</i>	<i>Nymphaea alba</i> , L.
81	Creeping Yellow Cress <i>Nasturtium sylvestre</i> , Brown	<i>Rorippa sylvestris</i> , Besser
"	Marsh Yellow Cress <i>Nasturtium palustre</i> , De Candolle	" <i>islandica</i> , Schinz and Thellung
82	Rock Cress <i>Arabis ciliata</i> , Brown	<i>Arabis Brownii</i> , Jordan
83	Jack-by-the-hedge <i>Sisymbrium alliaria</i> , Scopoli	<i>Alliaria officinalis</i> , Andr�
"	Thale Cress <i>Sisymbrium thaliana</i> , Hooker	<i>Sisymbrium Thalianum</i> , Gay
84	Charlock or Wild Mustard <i>Brassica sinapistrum</i> , Boissier	<i>Sinapis arvensis</i> , L.
85	Black Mustard <i>Brassica nigra</i> , Koch	" <i>nigra</i> , L.
"	White Mustard <i>Brassica alba</i> , Boissier	" <i>alba</i> , L.
86	Whitlow-grass <i>Draba verna</i> , L.	<i>Erophila verna</i> , L.
90	Upright Mignonette <i>Reseda suffruticulosa</i> , L.	<i>Reseda alba</i> , L.
91	Rock-rose <i>Helianthemum chamaecistus</i> , Miller	<i>Helianthemum nummularium</i> , Miller
94	Proliferous Pink <i>Dianthus prolifer</i> , L.	<i>Tunica prolifera</i> , Scopoli
95	Cheddar Pink <i>Dianthus glaucus</i>	<i>Dianthus caesiuss</i> , L.
96	Red Campion <i>Lychnis dioica</i> , L.	<i>Melandrium dioicum</i> , Schinz and Thellung
97	White Campion <i>Lychnis alba</i> , Miller	<i>Melandrium album</i> , Garcke
"	Corn Cockle <i>Lychnis githago</i> , Scopoli	<i>Agrostemma Githago</i> , L.
98	Sea Sandwort <i>Arenaria peploides</i> , L.	<i>Honkenya peploides</i> , Ehrhart



# LIST OF ALTERNATIVE NAMES—continued

PAGE	ENGLISH AND LATIN NAMES AS GIVEN IN THIS WORK	REVISED LATIN NAMES WITH AUTHORITIES
99	Mouse-ear Chickweed <i>Cerastium glomeratum</i> , Thuillier	<i>Cerastium viscosum</i> , L.
101	Red Sandwort Spurrey <i>Spergularia rubra</i> , Presl	<i>Spergularia campastris</i> , Ascherson
102	Tamarisk <i>Tamarix gallica</i> , L.	<i>Tamarix anglica</i> , Webb
103	Square-stalked St. John's Wort <i>Hypericum tetrapterum</i> , Fries	<i>Hypericum acutum</i> , Moench
105	Perennial Flax <i>Linum perenne</i> , L.	<i>Linum anglicum</i> , Miller
"	Narrow-leaved Flax <i>Linum angustifolium</i> , Hudson	" <i>bienne</i> , Miller
106	Round-leaved or Dwarf Mallow <i>Malva rotundifolia</i> , L.	<i>Malva neglecta</i> , Wallroth
"	Musk Mallow <i>Malva moschatus</i> , L.	" <i>moschata</i> , L.
112	Broom <i>Cytisus scoparius</i> , Link	<i>Sarothamnus scoparius</i> , Koch
113	Small Rest-harrow <i>Ononis repens</i> , L.	<i>Ononis reclinata</i> , L.
116	Hop Trefoil <i>Trifolium campestre</i> , Schreber	<i>Trifolium procumbens</i> , L.
118	Sainfoin, <i>Onobrychis viciaefolia</i> , Scopoli	<i>Onobrychis viciifolia</i> , Scopoli
124	Barren Strawberry <i>Potentilla fragariastrum</i> , Ehrhart	<i>Potentilla sterilis</i> , Garcke
126	Marsh Cinquefoil <i>Potentilla palustris</i> , Scopoli	<i>Comarum palustre</i> , L.
"	Tormentil <i>Potentilla tormentilla</i> , Neck	<i>Potentilla procumbens</i> , Sibth
128	Great Burnet <i>Poterium officinale</i> , Hooker	<i>Sanguisorba officinalis</i> , L.
129	Crab Apple <i>Pyrus malus</i> , L.	<i>Malus pumila</i> , Miller
134	Wall Pennywort <i>Cotyledon umbilicus</i> , L.	<i>Cotyledon Umbilicus-Veneris</i> , L.
136	Rose-root <i>Sedum roseum</i> , Scopoli	<i>Sedum Rosea</i> , Scopoli
139	Narrow-leaved Sundew <i>Drosera longifolia</i> , L.	<i>Drosera intermedia</i> , Hayne
143	Great Earth-nut <i>Carum bulbocastanum</i> , Koch	<i>Bunium Bulbocastanum</i> , L.
146	Five-leaved Dropwort <i>Oenanthe phellandrium</i> , Lam	<i>Oenanthe aquatica</i> , Poiret
148	Wild Parsnip <i>Pastinaca sativa</i> , L.	<i>Peucedanum sativum</i> , Watson
162	Field Scabious <i>Scabiosa arvensis</i> , L.	<i>Knautia arvensis</i> , Coult
163	Devil's-bit Scabious <i>Scabiosa succisa</i> , L.	<i>Succisa pratensis</i> , Moench

175	Butterbur	<i>Petasites vulgaris</i>	<i>Petasites hybridus</i> , Gaertner
177	Lesser Burdock	<i>Arctium lappa</i> , L.	<i>Arctium minus</i> , Bernhardt
178	Milk Thistle	<i>Cardus marianus</i> , L.	<i>Silybum Marianum</i> , Gaertner
179	Slender-flowered Thistle	<i>Cardus pycnocephalus</i> , L.	<i>Carduustenniflorus</i> Curtis
"	Spear Plume Thistle	<i>Cardus lanceolatus</i> , L.	<i>Cirsium vulgare</i>
180	Woolly-headed Thistle	<i>Cardus eriophorus</i> , L.	<i>Cnicus eriophorus</i> , Roth
"	Dwarf-Plume Thistle	<i>Cardus acaulis</i> , L.	<i>Cirsium acaule</i> , Weber
181	Creeping Plume Thistle	<i>Cardus arvensis</i> , Robson	" <i>arvense</i> , Scopoli
"	Marsh Plume Thistle	<i>Cardus palustris</i> , L.	" <i>palustre</i> , Scopoli
"	Meadow Plume Thistle	<i>Cardus pratensis</i> , Hudson	" <i>dissectum</i>
"	Melancholy Thistle	<i>Cardus heterophyllus</i> , L.	" <i>helenionides</i>
183	Bristly Ox-tongue	<i>Helminthia echinoides</i> , Gaertner	<i>Picris echinoides</i> , L.
184	Long-rooted Car's-ear	<i>Hypochoeris radicata</i> , L.	<i>Hypochoeris radicata</i> , L.
185	Prickly Lettuce	<i>Lactuca scariola</i>	<i>Lactuca Scariola</i> , L.
196	Cranberry	<i>Vaccinium oxycoccus</i> , P.	<i>Oxycoccus quadripetala</i> , Gilibert
209	Gentianella	<i>Cicendia filiformis</i> , Reichenbach	<i>Microcala filiformis</i> , Link
"	Centaury	<i>Erythraea centaurium</i> , Persoon	<i>Centaurium umbellatum</i> , Gilibert
"	Dwarf-branched Centaury	<i>Erythraea pulchella</i> , Fries	<i>Centaurium pulchellum</i> , Druce
"	Dwarf-tufted Centaury	<i>Erythraea linarifolia</i> , Persoon	" <i>littorale</i> , Gilmour
212	Fringed Water-lily	<i>Limnanthemum peltatum</i> , Link	<i>Nymphoides peltatum</i> , Rendle and Britton
213	Field Bindweed	<i>Convolvulus sepium</i> , L.	<i>Calystegia Sepium</i> , Brown
"	Seaside Convolvulus	<i>Convolvulus soldanella</i> , L.	" <i>Soldanella</i> , Brown
216	Small Bugloss	<i>Achusa arvensis</i>	<i>Lycopsis arvensis</i> , L.
221	Greater Broom-rape	<i>Orobancha elatior</i> , Sutton	<i>Orobancha major</i> , L.
"	Great Broom-rape	<i>Orobancha major</i> , L.	" <i>Rapum-Genistas</i> , Thuillier
222	Blue Broom-rape	<i>Orobancha caerulea</i> , Villars	<i>Orobancha purpurea</i> , Jacquin
228	Buxbaum's Speedwell	<i>Veronica buxbaumii</i> , Tenore	<i>Veronica persica</i> , Poiret
229	Water Speedwell	<i>Veronica anagallis</i> , L.	" <i>anagallis-aquatica</i> , L.
232	Clary	<i>Salvia verbenaca</i> , L.	<i>Salvia horminoides</i> , Pourret



# LIST OF ALTERNATIVE NAMES—continued

PAGE	ENGLISH AND LATIN NAMES AS GIVEN IN THIS WORK	REVISED LATIN NAMES WITH AUTHORITIES
234	Horse Mint <i>Mentha sylvestris</i> , L.	<i>Mentha longifolia</i> , Hudson
"	Marsh Mint <i>Mentha sativa</i> , L.	" <i>verticillata</i> , L.
"	Peppermint <i>Mentha piperata</i> , L.	" <i>piperita</i> , L.
235	Calamint <i>Calamintha officinalis</i> , Moench	<i>Calamintha ascendens</i> , Jordan
236	Wild Basil <i>Calamintha clinopodium</i> , Spenner	<i>Clinopodium vulgare</i> , L.
239	Wood Betony <i>Stachys betonica</i> , Benthams	<i>Stachys officinalis</i> , Trevisan
243	Sea Lavender <i>Statice limonium</i> , L.	<i>Limonium vulgare</i> , Miller
244	Upright Sea Lavender <i>Statice binervosum</i> , Smith	" <i>binervosum</i> , Salmon
"	Matted Sea Lavender <i>Statice bellidifolium</i> , De Candolle	" <i>bellidifolium</i> , Du-mortier
246	Shoreweed <i>Littorella lacustris</i> , L.	<i>Littorella uniflora</i> , Ascherson
249	Frosted Orache <i>Atriplex arenaria</i> , Woods	<i>Atriplex laciniata</i> , L.
257	Petty Spurge <i>Euphorbia peplis</i> , L.	<i>Euphorbia peplus</i> , L.
259	Bog Myrtle Family <i>Amentaceae</i>	<i>Myricaceae</i>
261	Branched Bur-reed <i>Sparganium ramosum</i> , Hudson	<i>Sparganium erectum</i> , L.
264	Reddish Pond-weed <i>Potamogeton rufescens</i> , Schrad	<i>Potamogeton alpinus</i> , Balbis
"	Various-leaved Pond-weed <i>Potamogeton heterophyllus</i> , Schreber	" <i>gramineus</i> , L.
265	Small Pond-weed <i>Potamogeton pusillus</i> , L.	" <i>Bercholdii</i> , Fieber
273	Bog Orchis <i>Malaxis paludosa</i> , Swartz	<i>Hammarbya paludosa</i> , Kuntze
277	White Helleborine <i>Cephalanthera latifolia</i> , Janchen	<i>Cephalanthera grandiflora</i> , Gray
281	Romanzoff's Lady's-tresses <i>Spiranthes stricta</i>	<i>Spiranthes romanzoffiana</i> , Chamisso
285	Spotted-leaved Marsh Orchis <i>Orchis latifolia</i> , L.	<i>Orchis pardalina</i> , Pugsley
286	Common Marsh Orchis <i>Orchis incarnata</i> , L.	" <i>latifolia</i> , L.
287	Lizard Orchis <i>Orchis hircina</i> , Scopoli	<i>Himantoglossum hirsutum</i> , Sprengel



287	Pyramidal Orchis	<i>Orchis pyramidalis</i> , L.	<i>Anacamptis pyramidalis</i> , Richard
288	Lesser Butterfly Orchis	<i>Habenaria bifolia</i> , Brown	<i>Platanthera bifolia</i> , Reichen- bach
"	Greater Butterfly Orchis	<i>Habenaria chloroleuca</i> , Reichenbach	<i>Platanthera chlorantha</i> , Reichenbach
289	White Fragrant Orchis	<i>Gymnadenia albida</i> , Richard	<i>Leucorchis albida</i> , Meyer
"	Frog Orchis	<i>Habenaria viridis</i> , Brown	<i>Coeloglossum viride</i> , Hartmann
291	Fly Orchis	<i>Ophrys insectifera</i> , L.	<i>Ophrys muscifera</i> , Hudson
301	Hairy Wood-rush	<i>Luzula vernalis</i> , De Candolle	<i>Luzula pilosa</i> , Willdenow
"	Great Hairy Wood-rush	<i>Luzula maxima</i> , De Candolle	" <i>sylvatica</i> , Gaudin
304	Annual Vernal Grass	<i>Anthoxanthum puellii</i> , Lecoq	<i>Anthoxanthum aristatum</i> , Boissier
306	Slender Foxtail Grass	<i>Alopecurus agrestis</i> , L.	<i>Alopecurus myosuroides</i> , Hud- son
"	Marram	<i>Ammophila arundinacea</i> , Host	<i>Ammophila arenaria</i> , Link

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